

ADDENDUM TO CONTRACT DOCUMENTS

	ADDENDUM: #01
	SCCD BID: #12-001
	Project: Building 202 NEW CHILD CARE CENTER DSA File No. 48-C1 DSA 02-112397
	Date : 5/16/2013 All Addendums can be found at the District Purchasing website below: www.solano.edu/purchasing

To All Prospective Bidders:

This **ADDENDUM**, dated May 16, 2013 supersedes sections of the original PROJECT MANUAL and DRAWINGS, wherein it contradicts them. All other conditions remain the same.

Acknowledgement of receipt of this **ADDENDUM** is required on the Bid Form.

Item Descriptions

No.

1. Specification Changes:

- 1.1 Revised Specification **Section 00 01 10 Table of Contents**
 - 1.1.1 Delete sections not used, rename sections, add new sections as listed below.
- 1.2 Revised Specification **Section 00 11 16 Invite to Bidder** to include District Purchasing and online plan room website information.
- 1.3 Revised Specification **Section 00 41 13 Stipulated Sum** to include fixed Owner's Allowance amount and delete Add Alternates.
- 1.4 Reissue the following specification sections omitted during printing.
 - 01 26 63: Change Orders, Work Authorizations and Field Orders**
 - 01 45 00: Quality Control**
 - 01 50 00: Temporary Facilities and Controls**
 - 01 60 00: Product Requirements**
 - 01 73 29: Cutting and Patching**
 - 01 78 23: Operation and Maintenance Data**
- 1.5 Revised Specification **Section 06 10 00 Rough Carpentry** to delete stud wall, joist framing, and fire retardant treatment.
- 1.6 Revised Specification **Section 06 20 00 Finish Carpentry** to add column covers and to delete fire retardant treatment of wood.

- 1.7 Revised Specification **Section 07 27 10 Building Paper** to coordinate with Section 07 29 00 Air and Moisture Barrier.
 - 1.8 Revised Specification **Section 07 29 00 Air and Moisture Barrier** to coordinate with Section 07 27 10 Building Paper.
 - 1.9 Revised Specification **Section 07 38 00 Water Vapor Emission and Alkalinity Control System for Concrete** to delete unit pricing reference.
 - 1.10 Revised Specification **Section 07 72 33 Roof Hatches and Retractable Ladder** (new title) to add disappearing ladder, ceiling access hatch, and change roof access hatch.
 - 1.11 Add Specification **Section 07 84 00 Firestopping** for wall and ceiling penetrations related to Work in Building 200.
 - 1.12 Revised Specification **Section 08 71 00 Hardware** to add self-contained electronic locks for coordination with the campus security system and adjust hardware groups.
 - 1.13 Revised Specification **Section 08 31 13 Access Doors** to delete fire-rated access doors and to add references for doors for IT and Security access.
 - 1.14 Revised Specification **Section 09 22 37 Lath and Accessories** to coordinate with Section 07 27 10 Building Paper.
 - 1.15 Revised Specification **Section 09 24 00 Portland Cement Plastering** to coordinate Section references.
 - 1.16 Add Specification **Section 09 68 13 Carpet Tile** due to the addition of carpeting.
 - 1.17 Add Specification **Section 32 80 00 Irrigation** due to the coordination of underground irrigation lines in the way of new work.
 - 1.18 Revised Specification **Section 33 44 00 Exterior Storm Sewer System** to add additional types of sewer pipes.
- 2. Drawings Changes:**
- 2.1. G-0**
 - 2.1.1. Added cover sheet with renderings.
 - 2.2. G-1**
 - 2.2.1. Revised Drawing Index to add revision numbers for this Addendum.
Revised Title to reference Addendum#1 and change date to 5/16/2013
 - 2.3. G-2**
 - 2.3.1. Revised Floor Area to read 3,961 sf.
 - 2.3.2. Revised Building Height / Stories to delete reference to basement.
 - 2.3.3. Revised Partition Key Plan to clarify partition types and locations.
 - 2.4. C-1**
 - 2.4.1. Revised to delete reference to Alternate #1. Work included in base contract.
 - 2.4.2. Added notes and demolition of additional utilities.
 - 2.4.3. Added note regarding protection of existing trees within 50 ft. of construction area.
 - 2.5. C-2**
 - 2.5.1. Revised to delete reference to Alternate #1. Work included in base contract.

2.5.2. Added additional notes to clarify work crossing paved areas.

2.6. C-3

2.6.1. Revised to delete reference to Alternate #1. Work included in base contract.

2.7. C-4

2.7.1 Revised Detail 1 to add 25' min. dimension and note regarding removing gravel bed and replacing damaged area with new sod.

2.7.1 Added notes about relocating utilities.

2.8 L1.0

2.8.1 Added new drawing to identify irrigation lines.

2.9 L1.1

2.9.1 Added new drawing to identify new work related irrigation lines.

2.10 L1.2

2.10.1 Added new drawing to provide details of new irrigation work.

2.11 A-0

2.11.1 Added electronic hardware to gate to match campus security system.

2.11.1 Added notes about repairing / replacing landscaping in areas of work.

2.12 A-1

2.12.1 Revised Detail 7/A10 to show desk height of 30 inches.

2.12.2 Revised plan to add carpet limits and location of transition strip.

2.12.3 Added detail reference for transition strip.

2.12.4 Added water play table.

2.12.5 Added space for appliances in Kitchen.

2.12.6 Added sink in each children's bathrooms.

2.13 A-2

2.13.1 Added Detail 3/A2 sim. & 4/A2 to clarify soffit locations.

2.14 A-3

2.14.1 Revised roof hatch location and detail references.

2.15 A-4

2.15.1 Revised exterior windows.

2.16 A-5

2.16.1 Revised exterior windows.

2.17 A-6

2.17.1 Added water play table in Section A and Detail 2/A-6.

2.18 A-7

2.18.1 Added ceiling hatch in revised location.

2.19 A-8

2.19.1 Revised Door Schedule to add louvered doors at Exterior Doors #105 and #113 and IT Closet #109.

2.19.2 Revised Window Types to show additional mullions and muttons.

2.19.3 Change finish schedule to add mildew inhibitor at children's toilet.

2.20 A-9

2.20.1 Revised details.

2.21 A-10

2.21.1 Revised casework Detail 7 to show knee space and 30" height.

2.21.2 Revised Casework Notes.

2.21.3 Revised Detail 14 to show shelf and wall at Clerestory Windows.

2.22 A-11

2.22.1 Revised Interior Elevations to show window changes.

2.23 A-12

2.23.1 Revised entire drawing to delete accessory totals, and add details for roof hatch with retractable ladder, and rearrange ADA details.

2.24 A-13

2.24.1 Revised drop ceiling framing for revised roof and ceiling hatches and added detail of ceiling hatch.

2.25 M2.0

2.25.1 Added note to verify final utility routing with SCCD.

2.26 M2.1

2.26.1 Added range hood exhaust.

2.27 P0.1

2.27.1 Added kitchen water heater.

2.28 P2.1

2.28.1 Added dishwasher plumbing.

2.29 P6.1

2.29.1 Added dishwasher detail.

2.30 E0.1

2.30.1 Revised notes.

2.31 E1.1

2.31.1 Revised conduit location.

2.31.2 Added relocation of conduits previously noted to be done by SCCD.

2.32 E2.1

2.32.1 Revised to reflect addition of appliances.

2.33 E3.1

2.32.1. Revised light fixture and tubes to use 25 watts in lieu of 32 watts to match campus standard.

2.32.2 Added electrical outlets at exterior.

2.32.3 Added disposal and switch in place of toaster.

2.32.4 Added outlets for appliances, including 208v for stove.

2.33 E3.2

2.33.1 Revised wiring sizes.

2.33.2 Added exhaust fan.

2.34 E4.1

2.34.2 Adjusted motor sizes and power rating.

2.35 FP-2

2.35.2 DSA Back-check Corrections.

2.36 FP-1

2.36.2 DSA Back-check Corrections.

3. Equipment:

- 3.1 All appliances in kitchen are owner furnished, contractor installed.
- 3.2 The Refrigerator will be furnished with the manufacturer's standard kit for ¼" dia. ice maker tubing & shut-off valve. Plumbing contractor to provide 2-way right angle fitting on cold water line under the sink to accept ¼" dia. ice maker water line tubing.
- 3.3 Dishwasher to fit under 34" ADA counter height.

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NOTICE TO BIDDERS

**INVITATION TO BID
SOLANO COMMUNITY COLLEGE
COUNTY OF SOLANO**

1. **NOTICE IS HEREBY GIVEN** that the Governing Board of the Solano Community College District ("District") is inviting sealed bids for **Building 202 New Childcare Center, Project 12-001** for all labor, materials, equipment, and supplies necessary for a new 2,900 square feet of single story enclosed space and 900 square feet of covered open space and associated exterior site improvements in accordance with the District's Bid Plans and Specifications.
2. Bids will be received until 2:00 PM on May 29, 2013 at Building 600 Boardroom at 4000 Suisun Valley Road, Fairfield CA 94534 **ATTN: PURCHASING - LAURA SCOTT**
3. Bid documents can be obtained through BPXpress Reprographics, 4740 E. 2nd #29, Benicia, Ca. 94510 for a non-refundable fee. All Bid document requests can be faxed to 707-745-3595 or mailed to BPXpress Reprographics located at 4740 E. 2nd #29, Benicia, Ca. 94510 Attn: **Building 202 New Childcare Center, Project 12-001.** Plans and Specifications should be available for Pick-up on or around May 07, 2013. Bid documents can be ordered or viewed on the District's online plan room at the following website. **www.blueprintexpress.com/SCCDMeasureG** Please call BPXpress directly if you have any questions regarding this plan room and setting up an account to purchase.
4. Technical questions must be submitted, in writing by no later than 2:00 p.m. on May 23, 2013 to Kitchell CEM, Attn.: John Lett, Project Manager via fax at 707-207-0423 or via e-mail at jlett@kitchell.com All Contractor Questions and Answers will then be publicly posted on the Solano Purchasing website which is: **http://solano.edu/purchasing/**
5. Work comprises construction of a new building with total floor area of approximately 2,900 square feet of single story enclosed space and 900 square feet of covered open space and associated exterior site improvements. Work includes, but is not limited to, civil, landscape, architectural, structural, mechanical, plumbing, and electrical Work.

Perform all work under a single prime contract.

6. To bid on this Project, the Bidder is required to possess one or more of the following State of California Contractor Licenses: B

The Bidder's license(s) must remain active and in good standing throughout the term of the Contract.
7. There will be a Mandatory Bid Walk on May 16, 2013, at 2:00PM at 4000 Suisun Valley Road, Building 600, Boardroom, Fairfield, CA. 94534

BID FORM – STIPULATED SUM (SINGLE-PRIME CONTRACT)

To: Governing Board of Solano Community College District (“District” or “Owner”)

From: _____
(Proper Name of Bidder)

The undersigned declares that the Contract Documents including, without limitation, the Notice to Bidders and the Instructions to Bidders have been read and agrees and proposes to furnish all necessary labor, materials, and equipment to perform and furnish all work in accordance with the terms and conditions of the Contract Documents, including, without limitation, the Drawings and Specifications of Bid No. 12-001.

PROJECT: **NEW CHILD CARE CENTER**

(“Project” or “Contract”) and will accept in full payment for that Work the following total lump sum amount, all taxes included:

	\$ _____
	\$ _____
	\$ _____
	\$ _____
TOTAL BASE BID	_____ dollars \$ _____

1. **Allowance.** The Bidder’s Base Bid shall include a \$20,000 fixed owner’s allowance for unforeseen items.

The above allowance shall only be allocated for unforeseen items relating to the Work. Contractor shall not bill for or be due any portion of this allowance unless the District has identified specific work, Contractor has submitted a price for that work or the District has proposed a price for that work, the District has accepted the cost for that work, and the District has prepared a change order incorporating that work. Contractor hereby authorizes the District to execute a unilateral deductive change order at or near the end of the Project for all or any portion of the allowance not allocated.

2. The undersigned has reviewed the Work outlined in the Contract Documents and fully understands the scope of Work required in this Proposal, understands the construction and project management function(s) is described in the Contract Documents, and that each Bidder who is awarded a contract shall be in fact a prime contractor, not a subcontractor, to the District, and agrees that its Proposal, if accepted by the District, will

be the basis for the Bidder to enter into a contract with the District in accordance with the intent of the Contract Documents.

3. The undersigned has notified the District in writing of any discrepancies or omissions or of any doubt, questions, or ambiguities about the meaning of any of the Contract Documents, and has contacted the Construction Manager before bid date to verify the issuance of any clarifying Addenda.
4. The undersigned agrees to commence work under this Contract on the date established in the Contract Documents and to complete all work within the time specified in the Contract Documents.
5. The liquidated damages clause of the General Conditions and Agreement is hereby acknowledged.
6. It is understood that the District reserves the right to reject this bid and that the bid shall remain open to acceptance and is irrevocable for a period of ninety (90) days.
7. The following documents are attached hereto:
 - a. Bid Bond on the District's form or other security
 - b. Designated Subcontractors List
 - c. Site-Visit Certification
 - d. Non-collusion Affidavit
8. Receipt and acceptance of the following addenda is hereby acknowledged:

No.____, Dated _____	No.____, Dated _____
No.____, Dated _____	No.____, Dated _____
No.____, Dated _____	No.____, Dated _____
No.____, Dated _____	No.____, Dated _____

9. Bidder acknowledges that the license required for performance of the Work is a _____ license.
10. The undersigned hereby certifies that Bidder is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the Work.
11. The Bidder represents that it is competent, knowledgeable, and has special skills with respect to the nature, extent, and inherent conditions of the Work to be performed.

Bidder further acknowledges that there are certain peculiar and inherent conditions existent in the construction of the Work that may create, during the Work, unusual or peculiar unsafe conditions hazardous to persons and property.

12. Bidder expressly acknowledges that it is aware of such peculiar risks and that it has the skill and experience to foresee and to adopt protective measures to adequately and safely perform the Work with respect to such hazards.
13. Bidder expressly acknowledges that it is aware that if a false claim is knowingly submitted (as the terms "claim" and "knowingly" are defined in the California False Claims Act, Cal. Gov. Code, §12650 et seq.), the District will be entitled to civil remedies set forth in the California False Claim Act. It may also be considered fraud and the Contractor may be subject to criminal prosecution.
14. The undersigned Bidder certifies that it is, at the time of bidding, and shall be throughout the period of the contract, licensed by the State of California to do the type of work required under the terms of the Contract Documents. Bidder further certifies that it is regularly engaged in the general class and type of work called for in the Contract Documents.
15. Furthermore, Bidder hereby certifies to the District that all representations, certifications, and statements made by Bidder, as set forth in this bid form, are true and correct and are made under penalty of perjury.

Dated this ___ day of _____ 20 _____

Name of Bidder _____

Type of Organization _____

Signed by _____

Title of Signer _____

Address of Bidder _____

Taxpayer's Identification No. of Bidder _____

Telephone Number _____

Fax Number _____

E-mail _ Web page _____

Contractor's License No(s):

No.: ___ Class: _____ Expiration Date: _____

No.: ___ Class: _____ Expiration Date: _____

No.: ___ Class: _____ Expiration Date: _____

If Bidder is a corporation, affix corporate seal.

Name of Corporation: _____

President: _____

Secretary: _____

Treasurer: _____

Manager: _____

END OF DOCUMENT

SECTION 01 26 63

CHANGE ORDERS; WORK AUTHORIZATION; FIELD ORDERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Refer to General Conditions, Article 12 for additional provisions regarding changes in the work. If any provision in this Section 01 26 63 should conflict with any provision in Article 12, this Section shall control.

1.02 NO CHANGES WITHOUT CONSENT; PERFORMING WORK ORDERED

- A. No extra Work shall be performed, and no change shall be made, except pursuant to a written Change Order, Work Authorization, or Field Order from the District stating that the extra Work or change is authorized, and no claim for any addition to the Contract Price or Time for Completion shall be valid unless ordered. However, nothing in this Section shall excuse the Contractor from diligently proceeding and fully completing the Project.

1.03 CHANGE ORDERS AUTHORIZED; PROCEDURE

- A. Authorization
 - 1. Change Orders Authorized. Subject to legal requirements relating to competitive bidding, the District may require changes in, additions to, or deletions from the scope of the Work to be performed or the materials to be furnished pursuant to the Contract Documents.

The District may, at any time, without notice to the sureties, by written order designated or indicated to be a Change Order, make any change or modification in the Work, or add to the Work within the general scope of the Contract, including, but not limited to changes:

 - a. In the Specifications or Drawings.
 - b. In the sequence, method or manner of performance of the Work.
 - c. In the District-furnished facilities, equipment, materials, service, or site.
 - 2. District Directed Changes Requiring an Increase in Contract Sum. If the Change in or addition to the work will result in an increase in the Contract Sum, the District shall have the right to require the performance thereof on a Lump Sum basis or a Time and Material basis, all as hereinafter more

particularly described. The right of the District as aforesaid shall apply with respect to each Change in the Work.

- B. Methods of Calculation. Adjustments, if any, to the Contract Price by reason of any such change, addition or deletion, shall be determined by one or more of the following methods, at the District's sole discretion. The Contractor shall provide sufficient substantiating data to allow the District to evaluate the Contractor's request for a Change Order.
1. By a lump sum proposal by the Contractor accepted or amended by formal action by the District; and/or
 2. By time and materials charges, limited to the "Actual Cost" to perform the Work, as defined by Paragraph D of this Article, plus overhead and profit as allowed by Paragraph C of this Section.
- C. Overhead/Profit and Allowable Time Limitations on Change Orders. If the District elects to have the Change in the Work performed on a Lump Sum basis, its election shall be based on a lump sum proposal, which shall be submitted by the Contractor to the Project Architect with a copy also sent to the Project Manager within ten (10) days of the Contractor's receipt of a Request for Proposal, response to a Request for Information, or modification, or any other response the Contractor feels increases or decreases the contract price therefore. The District reserves the right to request the Contractor to adjust the price of the change order if the District disagrees with the Contractor's quoted price. The District's request for a lump sum proposal shall not be deemed an election by the District to have the change in the Work performed on a lump sum basis. The Contractor's and the Contractor's subcontractor's proposal shall be itemized and segregated by labor and materials for the various components of the change in, or addition to, the Work (no aggregate labor total will be acceptable) and shall be accompanied by signed proposals of any subcontractors who will perform any portion of the change in, or addition to, the Work and of any persons who will furnish materials or equipment for incorporation therein. The proposal shall also include the Contractor's estimate of the time required to perform said changes or additional work

The portion of the proposal relating to labor, whether by the Contractor's forces or the forces of any of its subcontractors, may include reasonable anticipated costs of job site labor, including foremen, who will be directly involved in the change in the Work, for such time as they will be so involved. The Contractor's cost for project managers, project engineers, superintendents, clerical, and like personnel are considered as contained in overhead.

1. The Contractor's proposal for additional Work shall include by itemized breakdown for Work done by Contractor's own forces and including subcontractors with sub-subcontractors' itemized breakdowns:
 - a. Cost of labor, including: hourly base wages, Social Security taxes, Federal or State unemployment taxes, worker's compensation insurance, and fringe benefits required by collective bargaining agreements effective for the Contractor or subcontractor.

- b. Cost of materials and equipment or furnishings which will be incorporated into the permanent Work, including manufacturers or supplier's cost, sales taxes, and cost of delivery.
 - c. Construction equipment costs (not small tools) for time of use required at Contractor's or subcontractor's unit rates or at discounted local published rates, whichever is less.
 - d. General Conditions, General Requirements, supervision, overhead (excluding small tools) and profit applied to items number a, b, and c above for:
 - 1) Work done by Contractor's own forces, not including bond and insurance premiums, fifteen percent (15%) for work valued under \$5,000.00;
 - 2) Work done by Contractor's own forces, not including increased bond and insurance premiums, ten percent (10%) for work valued at \$5,000.00 or greater;
 - 3) Work done by subcontractors, all tiers, including increased bond and insurance premiums, if any, shall not exceed a cumulative total of ten percent (10%);
 - 4) General Conditions, General Requirements, Supervision, Overhead and Profit for Contractor on Subcontractor's work, five percent (5%);
 - 5) Under no circumstance will the total allowable mark up for General Conditions, General Requirements, supervision, overhead (excluding small tools) and profit, **exceed a cumulative total of fifteen percent (15%)**, including markups for all parties involved in a change. In no event shall allowable markup include any sum for home office overhead.
 - e. The cost of the Contractor's Performance, Payment, and Warranty Bond premiums shall not exceed one percent (1%).
2. In the event that the Contractor fails to submit his proposal within the designated period, the District may order the Contractor to proceed with the Change or Addition to the Work and the Contractor shall so proceed. The District shall unilaterally determine the reasonable cost and time to perform the Work in question, which determination shall be final and binding upon the Contractor. In no event shall the Contractor allow an unresolved change order to hamper the progress of the work.
 3. In the event that the parties are unable to agree as to the reasonable cost and time to perform the change in, or addition to, the work based upon the Contractor's Proposal, and the District does not elect to have the Change in the Work performed on a Time and Materials basis, the District shall make a unilateral determination of the reasonable cost and time to perform the change in the Work, based on its own estimates, the Contractor's submission, or a combination thereof. A Change Order shall be issued for the amounts of cost and time determined by the District and shall become

binding upon the Contractor unless the Contractor submits his protest in writing to the District within thirty (30) days of the issuance of the Change Order. District has the right to direct in writing the Contractor to perform the change in the Work which is the subject of such Change Order. Failure of the parties to reach agreement regarding the cost and time of performing the change in the Work and/or any pending protest shall not relieve the Contractor from performing the change in the Work promptly and expeditiously.

4. If the District elects to have the change in the Work performed on a Time and Materials basis, the same shall be performed, whether by the Contractor's forces or the forces of any of its subcontractor or sub-subcontractors, at actual cost of performing the change in Work, without any charge for administration, clerical expense, supervision, or superintendence of any nature whatsoever, or the cost, use or rental of tools or plant. The Contractor shall submit to the District daily Time and Material tickets, to include the identification number assigned to the change in Work, the location and description of the change in the Work, the classification of labor employed with names and Social Security numbers, the materials used, the equipment rented (not tools) and such other evidence of cost as the District may require. The District may require authentication of all Time and Material tickets and invoices by persons designated by the District for such purpose. The failure of the Contractor to secure any required authentication shall, if the District elects to treat it as such, constitute a waiver by the Contractor of any claim for the cost of that portion of the change in the Work covered by a non-authenticated ticket or invoice; provided, however, that the authentication of any such ticket or invoice by the District shall not constitute an acknowledgment by the District that the items were reasonably required for the change in the Work.
 5. No costs for General Conditions, General Requirements, supervision, overhead, and profit will be paid by the District on account of a change in the Work, except as specifically provided in Paragraph 1.03.C. and shall be deemed to include all costs and expenses which the Contractor or any of its subcontractors may incur in the performance of a change in the Work and which are not otherwise specifically recoverable by them pursuant to Paragraph 1.03.
- D. "Actual Cost" Defined. The actual cost to perform the work for purposes of this Section is limited to the applicable labor rates set forth in Specification Section 00 72 00, including Contractor's contributions directly attributable to the Work authorized; and the materialman's or supplier's invoice amount for all material and equipment actually used to accomplish the work authorized. All other direct and indirect costs, all costs attributable to the time needed to perform the Work ordered by such Change Orders, and all profit associated with such Work shall be included in the maximum overhead and profit amounts stated hereinabove.
- E. Audit and Verification. With respect to any change in the Work resulting in a change in the Contract Sum, the Contractor shall afford and shall require its subcontractors to afford access to the District at all reasonable times to any books, correspondence, instructions, receipts, vouchers, memoranda, and records of any

kind relating thereto, all of which shall be maintained by the appropriate parties for a period of at least three (3) years from and after the date the District makes payment on account of such change in work. The Contractor authorizes the District and shall require its subcontractors to authorize the District to check directly with any suppliers of labor and material with respect to, and to obtain, sworn statements and waivers of lien, if the District so elects.

- F. Changes Requiring a Decrease in Contract Sum. If the change in the Work will result in a decrease in the Contract Sum, the District shall require a quotation by the Contractor of the amount of such decrease for use in preparing a Change Order. The Contractor's quotation shall be forwarded to the District within ten (10) days of the Project Architect's request and, if acceptable to the Project Manager, shall be incorporated in the Change Order. Contractor's quotation shall include all direct costs associated with the decreased scope of work, plus a reasonable dollar amount for overhead. If not acceptable, the parties shall make every reasonable effort to agree as to the amount of such decrease, which may be based on a Lump Sum, properly itemized basis in accordance with Subparagraph 1.03.C.

If the Project Manager and the Contractor are unable to agree on the amount of such decrease, the decrease shall be the total estimated reduction in actual cost of the Work, as determined by the Project Manager in his/her reasonable judgment and the Contractor shall be bound to credit this amount to the District.

- G. Periodic Change Orders. The Project Manager is authorized to cumulate Work Authorizations and process periodic Change Orders including additions and deletions, and to develop procedures providing the methods for such processing in addition to and consistent with those set forth in herein.

1.04 WORK AUTHORIZATIONS; PROCEDURE

- A. Work Authorizations Authorized. The District, or its designee, is authorized to issue Work Authorizations instructing the Contractor to proceed with extra Work.
- B. Quotation by Contractor. Other than in extraordinary circumstances, as described below, before a Work Authorization is issued, the Contractor shall submit a quotation setting forth an estimated cost of the Work to be performed with sufficient substantiating data to allow the District to evaluate the quotation, and an estimate of the time necessary to perform the Work. If requested by the Project Architect, the Contractor shall provide additional data to support the quotation. The Contractor shall acknowledge the quotation as binding.
- C. Request for Price Adjustment. After the extra Work specified on the Work Authorization is completed, the Contractor may submit a request for a Contract Price Change Order due to the Work Authorization. The request shall be supported with substantiating data to show the actual costs to perform the Work and the overhead and profit being requested, as defined in Sections 1.03.C. and 1.03.D. Home office overhead shall not be claimed or reimbursed. The maximum price adjustment claimed shall not exceed ONE HUNDRED AND TEN PERCENT (110%) of the approved quotation.

- D. Request for Time Adjustment. If the Contractor claims that the Work Authorization has delayed the construction completion time, he shall verify the claimed delay by demonstrating with reference to the approved Project Progress Schedule that the Work Authorization in fact caused a delay in the overall completion date of the Project. Upon such demonstration, the Project Manager shall process a request for a Contract Time extension Change Order pursuant to Specification Section 00 72 00, Article 8.
- E. Cumulation of Work Authorizations. At the Project Manager's sole discretion, the Contractor's claims for Change Orders arising from several Work Authorizations may be cumulated into periodic Change Orders adjusting Contract Price, Time, or both, separately or in one Change Order.

Such periodic Change Orders shall include deductions for Changes which constitute Deductive Change Orders as defined in Section 1.3, F, during the time period being considered in the periodic Change Order.

- F. Immediate Work Authorizations. In the event extraordinary circumstances arise which require extra Work to be authorized before a quotation is prepared by the Contractor, the District or designee may issue an immediate Work Authorization without such quotation. Such Work Authorization shall include a maximum authorized sum over which no price adjustment will be authorized. The determination as to whether circumstances as described above exist is discretionary with the District. Such Work Authorizations otherwise shall be processed as specified in this Section.

1.05 FIELD ORDERS; PROCEDURES

- A. Field Orders Authorized. The Project Architect may issue Field Orders instructing the Contractor to proceed with Work differing from that shown in the Contract Documents, and which changes the Scope of the Work, by adding or deleting Work, by instructing Work to be located differently than shown on the Contract Drawings, or making other minor changes which the Project Architect determines are in the District's best interests.
- B. No Price or Time Adjustment Authorized. Field Orders are not authorized to change the Contract Price or Time, or to bind the District to the payment of any sum to the Contractor unless they specifically state so.
- C. No Cost Adjustments Required. If the change ordered in the Field Order will neither delete nor add costs to the Project, the Field Order shall so note. If the Contractor contends that extra work is required, Section 1.03 shall apply.
- D. Cost Adjustments Required. If the change ordered in the Field Order will either delete or add costs to the Project, the Field Order shall instruct the Contractor to submit its quotation. Thereafter, Section 1.02 or Section 1.03, as specified by the Project Manager, shall apply.
- E. Proceeding Before Decision. If the Contractor proceeds with Work noted on a Field Order without notifying the Project Architect of its claims that the Work is extra work, the Contractor shall have waived its right to request an adjustment to the Contract

Price and/or Time. Such notification must be made prior to commencing any of the work noted on the Field Order.

1.06 EXTRA WORK REQUESTS; PROCEDURE

- A. If the Contractor claims that any Clarification, Field Order, or other instruction issued by the District requires Work beyond the Scope of the Agreement for Construction, the following provisions shall apply.
1. Notice to Project Architect. Within ten (10) calendar days, the Contractor shall notify the Project Architect of its request, and submit a quotation for the requested costs, pursuant to Section 1.03.C. The Contractor shall submit additional information requested by the Project Architect to decide the request.
 2. Action by Project Architect. The Project Architect shall review the Contractor's submittals and either recommend for approval or deny Contractor's request. If the request is approved, the Project Architect may forward a recommendation for approval of the Change to the Project Manager. The Project Manager shall review the Contractor's submittals and either recommend for approval or deny Contractor's request. If the request is approved, the Project Manager may process either a Change Order or Work Authorization, pursuant to this Section. If the request is denied, the Project Manager shall so advise the Contractor. Thereafter, the Contractor shall proceed with the Work in issue. The Project Manager shall issue his decision within twenty-one (21) days of receipt of a complete submittal from the Contractor. The Project Manager shall recommend final action to the District and the District's decision shall be binding on the Contractor.
 3. Time. If the request is approved, the excess time above the durations allowed for review during which the request was being considered shall be included in the time allocation for the Work Authorization adjusting the request, and Article 1.03 shall apply thereto; if the request is adjusted by Change Order, any Time extension authorized thereby shall include the excess Time during which the request was pending. If the request is denied, no Time adjustment shall be authorized.
 4. Effect of Proceeding. If the Contractor proceeds with the Work without notifying the Project Manager pursuant to Paragraph A, or before a decision pursuant to Paragraph B, any claim for a Contract Price and/or Time adjustment shall be waived.
 5. Scheduling. The Contractor is responsible to schedule the Work and submit extra-work requests so the time required for decision, as specified in Paragraph B, does not delay the Work in general.
 6. Contractor Notice of Change. If the Contractor asserts that any event or occurrence has caused a change in, or addition to, the Work which change causes an increase or decrease in the Contractor's cost or the time required for the performance of any part of the Work under the contract, the Contractor shall, within ten (10) days of such event, give the District written

notice as herein required. Said notice shall include the instructions or circumstances that are the basis of the change and the Contractor's best estimate of the cost and time involved.

7. If the Contractor intends to assert a claim under this Section, he/she must, within ten (10) days after receipt of a written Change Order under Paragraph 1.02 above or the furnishing of a written notice under Paragraph 1.04.F. submit to the Project Manager a written statement setting forth the specific nature and cost of such claim, unless this period is extended by the Project Manager. The statement of claim may be included in the notice under Paragraph 1.04.F. above. Failure to submit such written notice within the specified time frame shall be deemed a waiver of the claim.
8. The statement of claim shall include all direct, indirect and impact costs associated with the change, as well as the Contractor's estimate of the schedule impact of the change, if any.
9. If the parties are unable to agree to the reasonable cost and time to perform the Change, or are unable to agree as to whether a change occurred, the District shall make a unilateral determination as described in Sub-sub-paragraph 1.03.C.2 and 1.03.C.3. The Contractor shall proceed pursuant to the provisions of that Section.

1.07 CHANGE ORDERS REGARDING TIME FOR COMPLETION

- A. Any time extension authorized by the District pursuant to Specification Section 00 72 13, Article 8, herein shall be set forth in a Change Order issued by the Solano Community College District.

1.08 CHANGE ORDERS DUE TO UNAVAILABLE MATERIALS

- A. In the event that the Contractor demonstrates good cause for a delay in the Contract Time due to the unavailability of materials, the District, in its sole discretion, may either grant a Contract time extension, or utilize this Section.
- B. In the event that the Project is unable to be completed due to unavailable materials, and if the Project is completed otherwise, the Contractor may request to delete the portion of the Project not yet completed from the Agreement for Construction, thereby allowing a Notice of Completion to be filed on the remainder of the Project. The District shall approve no such Change Order unless the Contractor accompanies his request with an offer to perform the Work so deleted for a price not to exceed the value of the Work deleted by such Change Order, such Work to be commenced upon delivery of the materials, and diligently prosecuted to completion. In the event the District elects to accept the Contractor's offer, Work done pursuant thereto shall not be construed as Work done on the Project, nor shall such Work be construed as affecting, in any way, the legal significance of the Notice of Completion filed on the Project. The application of this Section is limited as follows:
 - C. No Change Order shall be issued pursuant to this Section until the Contractor has submitted all documents required for final payment.

- D. This Section shall apply only to Work, the completion of which is precluded due to unavailable materials.
- E. Utilization of this Section lies solely within the discretion of the District, and such discretion hereby is delegated to the Project Manager.

1.09 EFFECT OF CONTRACTOR'S ACCEPTANCE OF CHANGE ORDER

- A. By accepting a Change Order, Contractor agrees to the changes, if any, in the Contract Price specified for each item and to the specified Extension of Time allowed, if any, for completion of the entire Work on account of such Change Order, and agrees to furnish all labor and materials and perform all Work necessary to complete all additional Work for the price adjustment and within the time specified. Contractor shall make no additional claim for adjustment to the Contract Price or time, nor for additional costs or damages, on account of the work referenced in such Change Order. A Change Order duly issued by the District and accepted by the Contractor shall constitute a complete accord and satisfaction as to the work, Contract Price, and Contract Time changed thereby. Contractor shall defend and indemnify the District, its officers, employees, agents and consultants, if any Subcontractor asserts any claim against the District due to a duly issued and accepted Change Order.

1.10 EFFECT ON SURETIES

- A. All changes authorized by the Contract Documents may be made without notice to, or consent of, the sureties on the Performance and Payment bonds, and shall not reduce their liability on the bonds.
- B. The District reserves the right to require additional Performance or Payment bonds to secure a Change Order. In this event, the Change Order shall be increased by the actual cost of the bond premium for the additional bond amounts if any.

1.11 GENERAL PROVISIONS RELATED TO CHANGES

- A. The Contractor shall not be entitled to any amount for indirect costs, damages, or expenses of any nature, including, but not limited to, so-called "impact" or "cumulative" costs, labor inefficiency, wage, material or other escalations beyond the prices upon which the proposal is based and to which the parties have agreed pursuant to the provisions of Section 01 26 63, and which the Contractor, its subcontractors or sub-subcontractors or any other person may incur as a result of delay, interferences, suspensions, changes in sequence or the like, for whatever cause, whether reasonable or unreasonable, foreseeable or unforeseeable, or avoidable or unavoidable, arising from the performance of any and all changes in the Work performed pursuant to this Section 01 26 63. It is understood and agreed that the Contractor's sole and exclusive remedy in such event shall be recovery of his direct costs as compensable hereunder and an extension of the contract Time, but solely in accordance with the provisions of the Contract Documents.
- B. No claim by the Contractor hereunder shall be allowed if asserted after final payment under this Contract. No claim relating to or flowing from a particular

Change shall be allowed after execution of the Change Order relating to that change.

- C. If any disputes should arise between the parties with respect to an increase or decrease in the Contract Sum or an expansion or contraction in the Contract Time as a result of a change in the Work, the Contractor shall not suspend performance of a change in the Work or the Work itself unless otherwise so ordered by the District in writing. The District shall, however, pay to the Contractor up to the District's reasonable estimated value of the change in the Work, regardless of the dispute, if said change in the Work results in an increase in the Contract Sum; and the District shall have the right to decrease the Contract Sum up to the District's reasonable estimated value of the change in the work, regardless of the dispute, if said change in the Work results in a decrease in the Contract Sum, and the Contractor shall be bound by the District's decision as to amount of payment or credit.

1.12 MINOR CHANGES IN THE WORK

- A. The District's Project Manager and/or Project Architect shall have authority to order minor changes in the Work not involving an adjustment in the Contract sum or an extension of the Contract Time, and not inconsistent with the Contract Documents. Such changes shall be effected by written order, and shall be binding on the District and the Contractor. The Contractor shall carry out such written orders promptly.

END OF SECTION

SECTION 01 45 00

QUALITY CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Section describes administrative and procedural requirements for quality control over the Work. Quality control includes inspections and tests and related actions including reports, performed by independent agencies, governing authorities, and the Contractor.
- B. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of its responsibility for compliance with requirements of the Contract Documents.
- C. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
 - 1. Specific quality control requirements for individual construction activities are specified in the Specification Sections that specify those activities. Those requirements, including inspections and tests, cover production of standard products as well as customized fabrication and installation procedures.
 - 2. Inspections, test and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.
 - 3. Requirements for the Contractor to provide quality control services required by the Project Manager, Architect, District, or authorities having jurisdiction are not limited by provisions of this SECTION.

1.02 DEFINITIONS

- A. Soils Engineer: As named in Section 00 01 01 "Project Title Page".
- B. Testing Laboratory: An independent commercial testing organization, retained and paid by the District to perform tests and inspections for the District's purposes and report on Work as specified in the Contract Documents, and as otherwise required.
- C. Testing Agency:
 - 1. An organization retained and paid by the Contractor to perform tests and report on whether or not designated items of Work comply with the requirements of the Contract Documents.
 - 2. The Testing Agency may be an independent commercial testing organization, or, with the prior acceptance of the District, the Testing Agency may be the testing laboratory of a trade association, the certified laboratory of a supplier, the Contractor's own forces, or other organization.

1.03 RESPONSIBILITIES

- A. District's Responsibilities:
 - 1. District will engage and pay for the services of the Testing Laboratory to perform inspections and tests specified as the District's responsibility.

2. Services of a Testing Laboratory are required for Work specified in the individual Specification Sections and as indicated on the Drawings.
- B. Contractor Responsibilities: The Contractor shall provide inspections, tests and similar quality control services, specified in individual Specification Sections and required by governing authorities, except where they are specifically indicated to be the District's responsibility, or are provided by another identified entity. Costs for these services shall be included in the Contract Sum.
1. Contractor shall employ and pay an independent Testing Agency, to perform specified quality control services, and quality control services required by laws, rules, regulations, and regulatory authorities.
 2. Where the District has engaged a Testing Laboratory or other entity for testing and inspection of a part of the Work, and the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the District, unless otherwise agreed in writing with the District.
 3. Retesting:
 - a. Contractor shall be responsible for retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.
 - b. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.
 4. Associated Services:
 - a. Cooperate with agencies performing required inspections, tests, and similar services and provide reasonable auxiliary services as requested.
 - b. Notify the agency sufficiently in advance of operations to permit assignment of personnel.
 - 1) If tests or inspections cannot be performed after such notice, reimburse the District for the Testing Laboratory personnel and travel expenses incurred.
 - 2) If tests or inspections must be performed at locations in excess of twenty (20) miles from the jobsite, reimburse the District for the travel expenses incurred.
 - c. Provide access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
 - d. Furnish adequate quantities of representative samples of materials that require testing and/or assist the agency in taking samples. Selection of the material to be tested shall be by the agency, not the Contractor.
 - e. Provide facilities for storage and curing of test samples and delivery of samples to agencies.
 - f. Provide the agency with product test reports and with preliminary design mixes proposed for use for materials mixes that require control by the agency.
 - g. Provide security and protection of samples and test equipment at the Project Site.

- C. Duties of Testing Agency: The independent Testing Agency engaged by the Contractor to perform inspections, sampling and testing of materials and construction specified in individual Specification Sections and by applicable laws, rules, and regulations; shall cooperate with the Project Manager, District, District Inspector, Project Architect, and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.
 - 1. Testing Agency shall notify the Project Manager, Architect, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 - 2. Testing Agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.
 - 3. Testing Agency shall not perform any duties of the Contractor.
- D. Duties of the Testing Laboratory: As specified for the Testing Agency.
- E. Coordination:
 - 1. Contractor and each agency engaged to perform inspections, tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition the Contractor and each agency shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
 - 2. Contractor shall be responsible for scheduling times for inspections, tests, taking samples, and similar activities.

1.04 RETESTING

- A. The District, Architect, and Architect's Consultants shall have the right to order additional tests as instructed if it has reasonable doubt that materials comply with specified requirements.
- B. If additional tests establish that materials comply with specified requirements, costs for such tests will be paid by the District.
- C. If additional tests establish that materials do not comply with specified requirements, costs for such tests shall be paid by the Contractor.

1.05 SUBMITTALS

- A. Each agency shall submit a certified written report of each inspection, test or similar service, to the Project Manager, Architect, Architect's structural engineering consultant, and the Contractor, in duplicate, and as follows:
 - 1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
 - 2. Written reports of each inspection, test or similar service shall include, but not limited to:
 - a. Date of issuance.
 - b. Project and title number.
 - c. Name, address and telephone number of agency.
 - d. Dates and locations of samples and tests or inspections.
 - e. Names of individuals making the inspection or test.
 - f. Designation of the work and test method.
 - g. Identification of product and Specification Section.
 - h. Complete inspection or test data.

- i. Test results and interpretation of test results.
- j. Ambient conditions at the time of sample-taking and testing.
- k. Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements.
- l. Name and signature of laboratory inspector.
- m. Recommendations on retesting.

1.06 QUALITY ASSURANCE

- A. Qualification for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, which are pre-qualified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.
- B. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State in which the Project is located.
- C. Contractor shall:
 - 1. Provide and maintain an effective quality control program and perform sufficient inspections and tests of all items of Work, including those of Subcontractors, to ensure compliance with the Contract Documents.
 - 2. Be present at the Site at all times during the execution of the Work.
 - 3. Monitor the quality of Work performed by its own forces and Subcontractors and monitor suppliers, manufacturers, products, services, and Site conditions to produce Work of specified quality in accordance with the requirements of the Contract Documents.
 - 4. Comply fully with manufacturer's written instructions, including each step in sequence. Do not omit any preparatory steps or installation procedures unless specifically modified or exempted in writing. Should manufacturers' instructions conflict with the Contract Documents, request written interpretation of requirements from the Project Manager before proceeding.
 - 5. Should manufacturer's instructions conflict with Contract Documents, request clarification from the Project Manager before proceeding.
 - 6. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
 - 7. Perform Work by persons qualified, skilled, and experienced to produce workmanship of specified quality.
 - 8. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.07 TEST SELECTION

- A. Contractor shall be responsible for, and shall pay for, all off-site and on-site tests except for the following:
 - 1. Concrete.
 - 2. Structural welding (field).
 - 3. Reinforcing steel.
 - 4. Bolts installed in concrete.

5. Expansion and epoxy anchors.

B. Contractor shall notify the Project Manager in writing three (3) working days in advance of time for the above named tests.

1.08 INDUSTRY STANDARDS

A. Refer to Section 01 42 20 "Standards".

1.09 FIELD SAMPLES

A. Contractor shall install field Samples at the Site as required by individual Specification SECTIONS for review.

B. Acceptable Samples represent the minimum required quality level for the Work.

C. Where field Sample is specified in individual Specification Section to be removed, clear area after field Sample has been accepted by District.

1.10 MOCK-UPS

A. Contractor shall assemble and erect specified items complete with all attachment and anchorage devices, seals, and finishes, as applicable.

B. Where mock-up is specified in individual Specifications Sections to be removed, Contractor shall clear the area after the mock-up has been accepted by the District.

C. Where individual Specification Sections indicate that accepted mock-up may remain as part of the Work, protect mock-up from subsequent damage.

D. Refer to Section 01 43 39 "Mock-Ups" and individual Specification Sections for additional information.

1.11 MANUFACTURERS' FIELD SERVICES AND REPORTS

A. When specified in individual Specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe Site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance of equipment and as applicable, and to initiate instructions when necessary.

B. Submit qualifications of observer to District thirty (30) days in advance of required observation. The observer is subject to approval by District.

C. Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.

D. Submit report in duplicate within thirty (30) days of observation to District for review.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, sample-taking and similar services repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with requirements in Section 01 73 29 "Cutting and Patching".
- B. Protect construction exposed by or for quality control service activities, and protect repaired construction.
- C. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION 01 45 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions;
- C. Site Standards.

1.02 TEMPORARY UTILITIES:

- A. Electric Power and Lighting
 - 1. The District will furnish and pay for power during the course of the work to the extent power is available in the building(s) or on the Site. The Contractor shall be responsible for providing temporary facilities required to deliver that power service from its existing location in the building(s) or on the Site to point of intended use.
 - 2. Contractor shall verify characteristics of power available in building(s) or on the Site. Contractor shall take all actions required to make modifications where power of higher voltage or different phases of current are required. Contractor shall be fully responsible for providing that service and shall pay all costs required therefor.
 - 3. The Contractor shall furnish, wire for, install, and maintain temporary electrical lights wherever it is necessary to provide illumination for the proper performance and/or observation of the Work: a minimum of 20 foot-candles for rough work and 50 foot-candles for finish work.
 - 4. The Contractor shall be responsible for maintaining existing lighting levels in the project vicinity should temporary outages or service interruptions occur.
- B. Heat and Ventilation
 - 1. Contractor shall provide temporary heat to maintain environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for the installation and curing of materials, and to protect materials and finishes from damage due to improper temperature and

humidity conditions. Portable heaters shall be standard units complete with controls.

2. Contractor shall provide forced ventilation and dehumidification, as required, of enclosed areas for proper installation and curing of materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors, and gases.
3. Contractor shall pay the costs of installation, maintenance, operation, and removal of temporary heat and ventilation, including costs for fuel consumed, required for the performance of the Work.

C. Water

1. The District will furnish and pay for water during the course of the work to the extent water is then available in the building(s) or on the Site. The Contractor shall be responsible for providing temporary facilities required to deliver such utility service from its existing location in the building(s) or on the Site to point of intended use.
2. Contractor shall use backflow preventers on water lines at point of connection to District's water supply. Backflow preventers shall comply with requirements of Uniform Plumbing Code.
3. Contractor shall make potable water available for human consumption.

D. Sanitary Facilities

1. Contractor shall provide sanitary temporary facilities in no fewer numbers than required by law and such additional facilities as may be directed by the Inspector for the use of all workers. The facilities shall be maintained in a sanitary condition at all times and shall be left at the Site until removal is directed by the Inspector or Contractor completes all other work at the Site.
2. Use of toilet facilities in the Work under construction shall not be permitted except by consent of the Inspector and the District.

E. Telephone Service

1. Contractor shall arrange with local telephone service company for telephone service for the performance of the Work. Contractor shall, at a minimum, provide in its field office one line for telephone and one line for fax machine.
2. Contractor shall pay the costs for telephone and fax lines installation, maintenance, service, and removal.

F. Fire Protection:

1. Contractor shall provide and maintain fire extinguishers and other equipment for fire protection. Such equipment shall be designated for use for fire protection only and shall comply with all requirements of the California Fire, State Fire Marshall and/or its designee.
2. Where on-site welding and burning of steel is unavoidable, Contractor shall provide protection for adjacent surfaces.

G. Trash Removal:

1. Contractor shall provide trash removal on a timely basis.

1.03 CONSTRUCTION AIDS:

A. Plant and Equipment:

1. Contractor shall furnish, operate, and maintain a complete plant for fabricating, handling, conveying, installing, and erecting materials and equipment; and for conveyances for transporting workmen. Include elevators, hoists, debris chutes, and other equipment, tools, and appliances necessary for performance of the Work.
2. Contractor shall maintain plant and equipment in safe and efficient operating condition. Damages due to defective plant and equipment, and uses made thereof, shall be repaired by Contractor at no expense to the District.

- B. None of the District's tools and equipment shall be used by Contractor for the performance of the Work.

1.04 BARRIERS AND ENCLOSURES:

- A. Contractor shall obtain the District's written permission for locations and types of temporary barriers and enclosures, including fire-rated materials proposed for use, prior to their installation.
- B. Contractor shall provide and maintain temporary enclosures to prevent public entry and to protect persons using other buildings and portions of the Site and/or Premises, the public, and workers. Contractor shall also protect the Work and existing facilities from the elements, and adjacent construction and improvements, persons, and trees and plants from damage and injury from demolition and construction operations.
- C. Contractor shall provide site access to existing facilities for persons using other buildings and portions of the Site, the public, and for deliveries and other services and activities.

D. Tree and Plant Protection:

1. Contractor shall preserve and protect existing trees and plants on the Premises that are not designated or required to be removed, and those adjacent to the Premises.
2. Contractor shall provide barriers to a minimum height of 4'-0" around drip line of each tree and plant, around each group of trees and plants, as applicable, in the proximity of demolition and construction operations.
3. Contractor shall not park trucks, store materials, perform Work or cross over landscaped areas. Contractor shall not dispose of paint thinners, water from cleaning, plastering or concrete operations, or other deleterious materials in landscaped areas, storm drain systems, or sewers. Plant materials damaged as a result of the performance of the Work shall, at the option of the District and at Contractor's expense, either be replaced with new plant materials equal in size to those damaged or by payment of an amount representing the value of the damaged materials as determined by the District.
4. Contractor shall remove soil that has been contaminated during the performance of the Work by oil, solvents, and other materials which could be harmful to trees and plants, and replace with good soil, at Contractor's expense.
5. Excavation Around Trees:
 - a. Excavation within drip lines of trees shall be done only where absolutely necessary and with written permission from the District.
 - b. Where trenching for utilities is required within drip lines, tunneling under and around roots shall be by hand digging and shall be approved by the District. Main lateral roots and taproots shall not be cut. All roots 2 inches in diameter and larger shall be tunneled under and heavily wrapped with wet burlap so as to prevent scarring or excessive drying. Smaller roots that interfere with installation of new work may be cut with prior approval by the District. Roots must first be cut with a Vermeer, or equivalent, root cutter prior to any trenching.
 - c. Where excavation for new construction is required within drip line of trees, hand excavation shall be employed to minimize damage to root system. Roots shall be relocated in backfill areas wherever possible. If encountered immediately adjacent to location of new construction, roots shall be cut approximately 6 inches back from new construction.

- d. Approved excavations shall be carefully backfilled with the excavated materials approved for backfilling. Backfill shall conform to adjacent grades without dips, sunken areas, humps, or other surface irregularities. Do not use mechanical equipment to compact backfill. Tamp carefully using hand tools, refilling and tamping until Final Acceptance as necessary to offset settlement.
- e. Exposed roots shall not be allowed to dry out before permanent backfill is placed. Temporary earth cover shall be provided, or roots shall be wrapped with four layers of wet, untreated burlap and temporarily supported and protected from damage until permanently relocated and covered with backfill.
- f. Accidentally broken roots should be sawed cleanly 3 inches behind ragged end.

1.05 SECURITY:

The Contractor shall be responsible for project security for materials, tools, equipment, supplies, and completed and partially completed Work.

1.06 TEMPORARY CONTROLS:

A. Noise Control

- 1. Contractor acknowledges that adjacent facilities may remain in operation during all or a portion of the Work period, and it shall take all reasonable precautions to minimize noise as required by applicable laws and the Contract Documents.
- 2. Notice of proposed noisy operations, including without limitation, operation of pneumatic demolition tools, concrete saws, and other equipment, shall be submitted to the District a minimum of forty-eight (48) hours in advance of their performance.

B. Noise and Vibration

- 1. Equipment and impact tools shall have intake and exhaust mufflers.
- 2. Contractor shall cooperate with District to minimize and/or cease the use of noisy and vibratory equipment if that equipment becomes objectionable by its longevity.

C. Dust and Dirt

- 1. Contractor shall conduct demolition and construction operations to minimize the generation of dust and dirt, and prevent dust and dirt from

interfering with the progress of the Work and from accumulating in the Work and adjacent areas including, without limitation, occupied facilities.

2. Contractor shall periodically water exterior demolition and construction areas to minimize the generation of dust and dirt.
3. Contractor shall ensure that all hauling equipment and trucks carrying loads of soil and debris shall have their loads sprayed with water or covered with tarpaulins, and as otherwise required by local and state ordinance.
4. Contractor shall prevent dust and dirt from accumulating on walks, roadways, parking areas, and planting, and from washing into sewer and storm drain lines.

D. Water

Contractor shall not permit surface and subsurface water, and other liquids, to accumulate in or about the vicinity of the Premises. Should accumulation develop, Contractor shall control the water or other liquid, and suitably dispose of it by means of temporary pumps, piping, drainage lines, troughs, ditches, dams, or other methods.

E. Pollution

1. No burning of refuse, debris, or other materials shall be permitted on or in the vicinity of the Premises.
2. Contractor shall comply with applicable regulatory requirements and anti-pollution ordinances during the conduct of the Work including, without limitation, demolition, construction, and disposal operations.

F. Lighting

1. If portable lights are used after dark, all light must be located so as not to direct light into neighboring property.

1.07 JOB SIGN(S):

A. General:

1. Contractor shall provide and maintain a Project identification sign with the design, text, and colors designated by the District; locate sign as approved by the District.
2. Signs other than the specified Project sign and or signs required by law, for safety, or for egress, shall not be permitted, unless otherwise approved in advance by the District.

B. Materials:

1. Structure and Framing: Structurally sound, new or used wood or metal; wood shall be nominal 3/4-inch exterior grade plywood.
2. Sign Surface: Minimum 3/4-inch exterior grade plywood.
3. Rough Hardware: Galvanized.
4. Paint: Exterior quality, of type and colors selected by the District and/or the Architect.

C. Fabrication:

1. Contractor shall fabricate to provide smooth, even surface for painting.
2. Size: 4'-0" x 3'-0", unless otherwise indicated.
3. Contractor shall paint exposed surfaces of supports, framing, and surface material with exterior grade paint: one coat of primer and one coat of finish paint.
4. Text and Graphics: As indicated.

1.08 PUBLICITY RELEASES:

Contractor shall not release any information, story, photograph, plan, or drawing relating information about the Project to anyone, including press and other public communications medium, including, without limitation, on website(s).

1.09 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or Mobile units with serviceable finishes, temperature controls, and temporary foundation adequate for formal loading.
- B. Contractor's Field Office: Provide mobile unit of sufficient size to accommodate needs of construction personnel. Keep office clean and orderly. Furnish and equip offices as follows:
 1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
 2. Conference room of sufficient size to accommodate meetings of 6 individuals. Provide electrical power service and 120-V ac duplex receptacles, with not less than 1 receptacle on each wall. Furnish room with conference table, chairs 4 foot square tack board and 4 foot square chalkboard (or marker board).
 3. Drinking water and supplies.

4. Trash receptacle.
5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
6. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
7. Telephone service with dedicated telephone lines for each one of the following:
 - a. Contractor's telephone with answering machine.
 - b. Contractor's facsimile machine.
 - c. Contractor's computer data connection (at Contractor's option).
8. Photocopy machine, capable of reproducing 11 inch by 17 inch format media.
9. Field office to allow for one designated working station for Inspector of Record that includes a desk, chair and internet connection.

END OF DOCUMENT

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section describes administrative and procedural requirements governing the Contractor's selection of products for use in the Project.
- B. Standards: Refer to Section 01 42 20 "Standards" for applicability of industry standards to products specified.

1.02 DEFINITIONS

- A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well recognized meanings in the construction industry.
 - 1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - a. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature, that is current as of the date of the Contract Documents.
 - 2. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
 - 3. "Equipment", is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

1.03 DESCRIPTION

- A. Material and equipment incorporated in the Work shall be:
 - 1. New, unless otherwise specified.
 - 2. Suitable for the use intended.
 - 3. In conformance with regulatory requirements of the applicable authority having jurisdiction.
- B. No material or equipment shall be used for any purpose other than that for which it is designed or specified.
- C. No material shall contain asbestos or polychlorinated biphenals (PCBs).
- D. No materials or products shall contain formaldehyde in excess of the amount recommended by the State of California Department of Health Services (DOHS).

1.04 TRANSPORTATION AND HANDLING

- A. Deliver manufactured products in the manufacturer's original, unbroken containers or packaging, with identifying labels intact and legible. Comply with manufacturer's printed instructions and recommendations.
- B. Immediately on delivery, inspect shipments to assure compliance with the requirements of the Contract Documents and reviewed submittals, and to verify that products are properly protected and undamaged.
- C. Handle products in a manner to avoid soiling and damaging the products and their packaging.
- D. Promptly remove damaged and defective products from the Project Site, and replace at no increase in Contract Sum.
- E. Hazardous Materials:
 - 1. Handle hazardous materials in compliance with Section 5194, of the General Industry Safety Order, CCR Title 8.
 - 2. Prior to the delivery of any hazardous materials, as defined by the State of California, submit a copy of the Material Safety Data Sheet (MSDS) to the Project Manager.
 - 3. Inspections:
 - a. Make on-site hazard surveillance inspections of construction area, storage, and field office both during and after hours.
 - b. Submit schedule for approval by the Project Manager.

1.05 STORAGE

- A. General:
 - 1. Store manufactured products in compliance with the manufacturers' printed instructions, with seals and labels intact and legible.
 - 2. Store products subject to damage by the elements in weather tight enclosures.
 - 3. Maintain temperature and humidity within the ranges required by the manufacturers.
 - 4. Unless otherwise specified or required, maintain packaged materials with seals unbroken and labels intact until time of use.
 - 5. Comply with additional requirements specified in individual Specification SECTIONS.
 - 6. Promptly remove damaged material and unsuitable items from the Project Site, and promptly replace with material meeting the specified requirements, at no increase in Contract Sum.
- B. Exterior Storage:
 - 1. Store fabricated products above the ground, on blocking or skids, to prevent soiling and staining.
 - 2. Cover products that are subject to deterioration with imperious sheet coverings; provide adequate ventilation to avoid condensation.
 - 3. Store loose granular material in a well-drained area on solid surfaces to prevent mixing with foreign matter.
- C. Arrange storage to facilitate inspection.

- D. Periodically inspect stored products to assure that products are maintained under specified conditions and free from damage and deterioration.
- E. Protection After Installation:
 - 1. Provide substantial coverings as necessary to protect installed products from damage from traffic and construction operations. Remove coverings when no longer needed.
 - 2. Maintain temperature and humidity conditions for interior equipment and finish products in compliance with the manufacturers' printed instructions and recommendations.
 - 3. Maintain finished surfaces clean and unmarred until final accepted by the District. Clean completed Work as frequently as necessary.
 - 4. Adjust and lubricate operable components to ensure operability without damaging effects.
 - 5. Supervise construction activities to ensure that no part of the Work completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the remainder of the construction period.

1.06 PRODUCT OPTIONS

- A. For products specified or indicated by descriptive requirements only, select any product by any manufacturer meeting description and is recommended by manufacturer for the application indicated. Products not in compliance with the requirements will be considered substitutions.
- B. For products specified or indicated by performance requirements only, select any product by any manufacturer meeting requirements and is recommended by manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application. Manufacturer's recommendations may be contained in published literature or by manufacturer's written certification of performance. Products not in compliance with the performance requirements specified or indicated will be considered substitutions.
- C. For products specified or indicated only by reference standard of trade, industry or governmental organizations select any product meeting such standard. Refer to Section 01 42 13 "Abbreviations And Acronyms" for further information. Products not in compliance with the reference standard will be considered substitutions.
- D. For products specified or indicated by naming several products or manufacturers, select any one of the products or manufacturers named that complies with the specified requirements. When the naming of one or more products is followed by "or accepted equal" or similar phrase, a substitute product may be offered for consideration. Products other than those specified or indicated will be considered substitutions.
- E. For products specified or indicated by combination of descriptive material, reference to standards, performance criteria, product or manufacturer's name and there are apparent discrepancies or conflicts between the requirements, the Architect reserves the right to consider them a substitution that fails to satisfy one or more of the requirements. Bidders who discover such discrepancy shall request clarification by Addendum during the bidding period.

For products specified or indicated by naming only one product and manufacturer, there is no option. Provide specified product.

Submit proposed substitution products as specified in Section 01 25 00 "Substitution Procedures".

1.07 QUALITY ASSURANCE

- A. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.
- B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.
- C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturers' or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.
 - 1. Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.
 - 2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface, which is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.
 - e. Ratings.

PART 2 - PRODUCTS

2.01 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and unused at the time of installation.
 - 1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
 - 2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous job experience.
 - 1. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.
 - 2. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern and texture from the product line selected.

PART 3 - EXECUTION

3.01 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's printed instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.
- B. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of completion and acceptance by the District.

END OF SECTION 01 60 00

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This SECTION describes the requirements for performing cutting and patching; patching includes the insertion or projection of other products in or from a surface.
- B. Contractor shall be responsible for cutting, fitting, and patching required to complete Work for proper fit, appearance and integration with existing and new Work.

1.02 PATCHING DESIGN CRITERIA

- A. Patching shall achieve security, strength, and weather protection, as applicable, and shall preserve continuity of existing fire ratings.
- B. Patching shall successfully duplicate undisturbed adjacent finishes, colors, textures, and profiles. Where there is dispute as to whether duplication is successful or has been achieved to a reasonable degree, the Architect's judgment shall be final.

1.03 COORDINATION AND PROTECTION

- A. Protect from damage all portions of the Work or work of the District or separate contractors adjacent to cutting or patching operations, including excavation.
- B. Obtain written permission prior to commencing cutting, patching or excavation operations on the work of the District or separate contractors.
- C. Protect adjacent occupied spaces from damage during concrete cutting and coring.
- D. Maintain the security of facility at all times.
- E. When requested in writing, allow the District or separate contractor to perform reasonable cutting, patching or excavation operation on the Work.

1.04 SUBMITTALS

- A. Where approval of procedures for cutting and patching is required before proceeding, submit a proposal describing procedures well in advance of the time cutting and patching will be performed and request approval to proceed. Include the following information, as applicable, in the proposal:
 - 1. Describe the extent of cutting and patching required and how it is to be performed.
 - 2. Include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
 - 3. List products to be used and firms or entities that will perform the Work.
 - 4. Indicate dates when cutting and patching is to be performed.
 - 5. List utilities that will be disturbed or affected and how long service will be disrupted.

- B. Where cutting and patching involves addition of reinforcement to structural elements, submit details and engineering calculations to show how reinforcement is integrated with the original structure.
- C. Approval by the Project Manager to proceed with cutting and patching does not waive the Project Manager's or Architect's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Materials shall be as specified in the applicable, individual Sections of the Specifications and as required to match existing construction.
- B. Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect after consulting with the Project Manager. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.01 GENERAL

- A. Perform cutting associated with structural reinforcing, and patching in a manner to prevent damage to other Work and to provide proper surfaces for the installation of materials, equipment, and repairs.
- B. Do not cut or alter structural members without prior consultation with the Project Manager.
- C. Wherever practicable, employ original installer or fabricator providing Work under this Contract to perform cutting and patching for new:
 - 1. Weather-exposed and moisture-resistant products.
 - 2. Fireproofing.
 - 3. Finished surfaces exposed to view.
- D. Adjust and fit products to provide a neat installation.
- E. Finish or refinish, as required, cut and patched surfaces to match adjacent finishes. Paint over complete surface plane, unless otherwise indicated. Over patched wall or ceiling surfaces, paint to nearest cutoff line for entire surface, such as intersection with adjacent wall or ceiling, beam or pilasters or to nearest opening frame, unless otherwise indicated. Painted surfaces shall not present a spotty, touched-up appearance.

3.02 INSPECTION

- A. Before cutting existing surfaces examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.

- B. Before proceeding, meet at the Site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.03 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.
- C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

3.04 PERFORMANCE

- A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required restoring surfaces to their original condition.
- B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.
 - 1. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Cut through concrete and masonry using a cutting machine such as a Carborundum saw or diamond core drill.
 - 4. Comply with requirements of applicable Sections of Division 2 where cutting and patching requires excavating and backfilling.
 - 5. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.
- C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
 - 1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
 - 2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - 3. Where removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color

and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary to achieve uniform color and appearance.

- a. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken area containing the patch, after the patched area has received primer and second coat.
4. Patch, repair or re-hang existing ceilings as necessary to provide an even plane surface of uniform appearance.

3.05 CLEANING

- A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access.
- B. Remove completely paint, mortar, oils, putty, and items of similar nature.
- C. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied.
- D. Restore damaged pipe covering to its original condition.

END OF SECTION 01 73 29

OPERATION AND MAINTENANCE DATA

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Completion of the Work;
- B. Special Conditions.

1.02 QUALITY ASSURANCE:

Contractor shall prepare instructions and data by personnel experienced in maintenance and operation of described products.

1.03 FORMAT:

- A. Contractor shall prepare data in the form of an instructional manual entitled "OPERATIONS AND MAINTENANCE MANUAL & INSTRUCTIONS" ("Manual").
- B. Binders: Contractor shall use commercial quality, 8-1/2 by 11 inch, three-side rings, with durable plastic covers; two inch maximum ring size. When multiple binders are used, Contractor shall correlate data into related consistent groupings.
- C. Cover: Contractor shall identify each binder with typed or printed title "OPERATION AND MAINTENANCE MANUAL & INSTRUCTIONS"; and shall list title of Project and identify subject matter of contents.
- D. Contractor shall arrange content by systems process flow under section numbers and sequence of Table of Contents of the Contract Documents.
- E. Contractor shall provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- F. Text: The content shall include Manufacturer's printed data, or typewritten data on 24 pound paper.

- G. Drawings: Contractor shall provide with reinforced punched binder tab and shall bind in with text; folding larger drawings to size of text pages.

1.04 CONTENTS, EACH VOLUME:

- A. Table of Contents: Contractor shall provide title of Project; names, addresses, and telephone numbers of the Architect, any engineers, subconsultants, Subcontractor(s), and Contractor with name of responsible parties; and schedule of products and systems, indexed to content of the volume.
- B. For Each Product or System: Contractor shall list names, addresses, and telephone numbers of Subcontractor(s) and suppliers, including local source of supplies and replacement parts.
- C. Product Data: Contractor shall mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- D. Drawings: Contractor shall supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Contractor shall not use Project Record Documents as maintenance drawings.
- E. Text: The Contractor shall include any and all information as required to supplement product data. Contractor shall provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
- F. Warranties and Bonds: Contractor shall bind in one copy of each.

1.05 MANUAL FOR MATERIALS AND FINISHES:

- A. Building Products, Applied Materials, and Finishes: Contractor shall include product data, with catalog number, size, composition, and color and texture designations. Contractor shall provide information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Contractor shall include Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture Protection and Weather Exposed Products: Contractor shall include product data listing applicable reference standards, chemical composition, and details of installation. Contractor shall provide recommendations for inspections, maintenance, and repair.

- D. Additional Requirements: Contractor shall include all additional requirements as specified in the Specifications.
- E. Contractor shall provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.06 MANUAL FOR EQUIPMENT AND SYSTEMS:

- A. Each Item of Equipment and Each System: Contractor shall include description of unit or system, and component parts and identify function, normal operating characteristics, and limiting conditions. Contractor shall include performance curves, with engineering data and tests, and complete nomenclature, and commercial number of replaceable parts.
- B. Panelboard Circuit Directories: Contractor shall provide electrical service characteristics, controls, and communications.
- C. Contractor shall include color coded wiring diagrams as installed.
- D. Operating Procedures: Contractor shall include start-up, break-in, and routine normal operating instructions and sequences. Contractor shall include regulation, control, stopping, shut-down, and emergency instructions. Contractor shall include summer, winter, and any special operating instructions.
- E. Maintenance Requirements: Contractor shall include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Contractor shall provide servicing and lubrication schedule, and list of lubricants required.
- G. Contractor shall include manufacturer's printed operation and maintenance instructions.
- H. Contractor shall include sequence of operation by controls manufacturer.
- I. Contractor shall provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Contractor shall provide control diagrams by controls manufacturer as installed.

- K. Contractor shall provide Contractor's coordination drawings, with color coded piping diagrams as installed.
- L. Contractor shall provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- M. Contractor shall provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- N. Additional Requirements: Contractor shall include all additional requirements as specified in Specification(s).
- O. Contractor shall provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.08 SUBMITTAL:

- A. Contractor shall submit to the District for review two (2) copies of preliminary draft or proposed formats and outlines of the contents of the Manual within thirty (30) days of Contractor's start of Work.
- B. For equipment, or component parts of equipment put into service during construction and to be operated by District, Contractor shall submit draft content for that portion of the Manual within ten (10) days after acceptance of that equipment or component.
- C. Contractor shall submit two (2) copies of a complete Manual in final form prior to final Application for Payment. Copy will be returned with Architect/Engineer comments. Contractor must revise the content of the Manual as required by District prior to District's approval of Contractor's final Application for Payment.
- D. Contractor must submit two (2) copies of revised Manual in final form within ten (10) days after final inspection.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Section Includes: Provision of all **miscellaneous** lumber framing, rough hardware and blocking as indicated in the contract drawings **to assist the work of other trades.**

1.02 REFERENCES

- A. Requirements of General Conditions and Division 1 apply to all Work in this Section.
- B. Published Specifications, standards, tests, or recommended methods of trade, industry, or governmental organizations apply to Work in this Section where cited by abbreviations noted below (latest editions apply).
 - 1. California Code of Regulations. Title 24, 2010 edition, also known as California Building Code (CBC)
 - 2. American Plywood Association, "Guide to Plywood Grades" (APA)
 - 3. United States Product Standard, PS-1-98 "Construction and Industrial Plywood" (PS)
 - 4. Underwriters' Laboratories, Inc., "Fire Hazard Classification. FR-S" (UL)
 - 5. West Coast Lumber Inspection Bureau, "Standard Grading Rules No. 17" (WCLIB)
 - 6. Western Wood Products Association, "Grading Rules for Lumber" (WWPA)
 - 7. American Wood Preservers Association Standards (AWPA)
 - 8. American Forest and Paper Association (AF&PA)
 - 9. American Society of Testing and Materials, International (ASTM)

1.03 SUBMITTALS

- A. Shop Drawings of all specially fabricated rough hardware.
- B. Certificates of compliance with standards specified.

1.04 PRODUCT DELIVERY. STORAGE AND HANDLING

- A. Provide proper facilities for handling and storage of materials to prevent damage to edges, ends, and surfaces.
- B. Keep materials dry. Where necessary, stack materials off ground on level flat forms, fully protected from weather.

1.05 JOB CONDITIONS

- A. Environmental Requirements: Maintain uniform moisture content of lumber at not more than 19-percent before, during, and after installation.
- B. Sequencing, Scheduling: Coordinate details with other Work supporting, adjoining or fastening to rough carpentry Work.

PART 2 - PRODUCTS

2.01 MATERIAL

- A. Rough Carpentry:
 - 1. Sills on Concrete: Foundation grade redwood or pressure treated Douglas Fir.
 - 2. Lumber (Wood Framing): Meet requirements of following minimum grades.

<u>Item</u>	<u>Grade</u>
Studs	D.F. NO.2
Plates	D.F. NO.2
Beams	D.F. NO.1
Joists	D.F. NO.1
Posts	D.F. NO.1
Blocking	D.F. NO.2
 - 3. Plywood: Provide thickness, grade, and panel identification index shown on drawings.
- B. Rough Hardware: All exterior hardware shall be hot-dipped galvanized.
 - 1. Nails: Common wire, typical; hot-dipped galvanized at exposed conditions and pressure-treated lumber.
 - 2. Powder Driven Fasteners: Tempered steel pins with special corrosion-resistant finish. Provide guide washers to accurately control penetration, maximum 3/4inch. Accomplish fastening by low-velocity piston-driven powder-actuated tool. Pins and tool: Hilti Fastening Systems (ICBO #2388); or equal product substituted per Section 01 63 00.

3. Expansion Bolts: Reverse cone, self-wedging, expansion type, Tightening of nut or increased tension on bolt shank shall act to force wedges outward to create positive increased resistance to withdrawal, Hilti Kwik - Bolt 3 (ICBO ESR-1385) or equal product substituted per Section 01 25 13.
4. Metal Framing Connectors: Fabricate from hot-dipped galvanized steel (GOO coating). Connectors in contact with pressure treated lumber shall have G185 hot dipped galvanized coating per ASTM A653. Connectors shall be at least 16gauge material, 1/8-inch plate materials where welded, unless otherwise shown or specified, punched for nailing. Nails and nailing shall conform to the manufacturer's instructions, with a nail provided for each punched nail hole. Use maximum nail size listed by manufacturer. Manufactured by Simpson Company or equal product substituted per Section 01 25 13.
5. Miscellaneous Hardware: Provide all common screws, bolts, fastenings, washers and nuts required to complete rough carpentry Work.
6. Bolts and sill bolts in wood shall be ASTM A307 with standard cut threads; full diameter bolts (no rolled or "upset" threads permitted) per ANSI/ASME standard B18.2.1.

2.02 FABRICATION

A. Preparation:

1. Verify measurements at job site.
2. Verify details and dimensions of equipment and fixtures integral with finish carpentry for proper fit and accurate alignment.
3. Coordinate details with other work supporting, adjoining, or fastening to casework.

B. Lumber:

1. Air- or kiln-dry to maximum 19-percent moisture content at time of surfacing.
2. Furnish surfaced four sides, S4S, unless otherwise noted.
3. Size to conform with rules of governing standard. Sizes shown are nominal unless otherwise noted.

C. Wood Treatments:

1. Preservative Treatment: Furnish in accordance with AWPA. Preservatives with an ammonia base, including Ammoniacal Copper Zinc Arsenate (ACZA) are not permitted.

- a. Treat lumber and plywood sheathing.
 - 1) In contact with concrete and masonry.
 - 2) Exposed to weather permanently.
 - 3) Where specified in the Contract Documents.
- b. Lumber: Treat in accordance with AWPA C2.
- c. Plywood: Treat in accordance with AWPA Cg.
- d. After Treatment and prior to shipping, air- or kiln-dry lumber to maximum 12-percent moisture content.
- e. Preservative treated lumber and plywood shall be stamped or tagged in accordance with AWPA standards.

2.03 SOURCE QUALITY CONTROL

- A. Lumber shall bear grade-trademark or be accompanied by certificate of compliance of appropriate grading agency.
- B. Plywood shall bear APA grade-trademark.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas to receive rough carpentry Work and verify following:
 - 1. Completion of installation of building components to receive rough carpentry Work.
 - 2. That surfaces are satisfactory to receive Work.
 - 3. That spacing, direction, and details of supports are correct to accommodate installation of blocking, backing, stripping, furring and nailers.
 - 4. That all anchor bolts and hold-down bolts are properly installed.

3.02 INSTALLATION

- A. Cutting: Perform all cutting, boring, and similar Work required.
- B. Studs, Joists, Beams, and Posts: Install all members true to line. No wood shingle shims are permitted. Place joists with crown up; maximum 1/4-inch crown permitted.
- C. Nail joints in accordance with applicable requirements of the CBC Table 23A-II-B-1 unless otherwise shown or specified. Predrill where nails tend to split wood. Nails into pressure-treated lumber shall be hot-dipped galvanized.

- D. Bolt holes to be 1/16-inch oversize. Threads shall not bear on wood. Use standard cut washers against wood, unless otherwise noted. Use malleable iron washers at exposed conditions. Carriage bolts require washers under the nut only.
- E. Provide blocking, grounds, nailers, stripping, and backing as shown and as required to secure other Work.
- F. Maintain 1/8-inch gap between all plywood panel edges.
- G. Do not utilize plywood sheets having a width smaller than 2-feet 0-inches.
- H. Where wood is cut, sawed, planed, bored or marred after **preservative treatment**, apply two heavy brush coats of same material used in treatment.
- I. Nail heads shall be driven flush with plywood surface. Overdriven nails (nails which fracture the outer ply layer) shall be replaced one for one.
- J. Screws (Wood or Lag): Screws shall be screwed and not driven into place. Screw holes shall be predrilled to the same diameter and depth of shank. Holes for threaded portion shall be predrilled less than or equal to the diameter of the root of the thread. Provide standard cut washers under head of lag screws.

3.03 CLEANING AND ADJUSTING EXPOSED TIMBER

- A. Remove damaged or otherwise disfigured portions and replace with new prior to the Owner's acceptance.
- B. Wash finished Work in strict accordance with product manufacturer's directions and ensure that washed surfaces do not differ from clean unwashed surfaces. Any difference will be considered unsatisfactory work.

3.04 FIELD QUALITY CONTROL

- A. The Owner's Testing Laboratory shall:
 - 1. Inspect erected timber framing as required to establish conformity of work with Drawings.
 - 2. Inspect all bolted connections.
 - 3. Inspect all timber connectors per CBC Section 2337 A.2.
 - 4. Inspect roof diaphragm nailing for nail size, spacing and penetration at plywood panel edges, and special nailing at collector and drag members.
 - 5. Inspect shear wall fasteners for screw size, spacing and penetration at plywood panel edges, and nailing at hold-down posts.
- B. Machine Nailing: Use of machine nailing is subject to a satisfactory jobsite demonstration for each project and the approval of the Project Inspector, the

Structural Engineer and DSA. The approval is subject to continued satisfactory performance. If the nail heads penetrate the outer ply more than would be normal for a hand-held hammer, or if minimum allowable edge distances are not maintained, the performance will be deemed unsatisfactory and machine nailing shall be discontinued.

END OF SECTION

SECTION 06 20 00

FINISH CARPENTRY

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Section describes the requirements for furnishing and installing finish carpentry a Work.
- B. Finish Carpentry Work includes, but is not limited to:
 - 1. Custom-design plastic-laminate covered casework.
 - 2. Custom-design wood veneer covered casework.
 - 3. Plastic-laminate covered countertops, work surfaces, and splashes.
 - 4. Miscellaneous millwork and wood trim.

1.02 QUALITY ASSURANCE

- A. Reference Standard: Materials, fabrication, and installation of finish carpentry Work shall be in compliance with the standards of the latest edition of the Woodwork Institute "Manual of Millwork* (hereinafter called the INI Manual)" for "Custom" grade unless specified otherwise.
- B. Casework Manufacturer's Qualifications: Manufacturer shall secure the Reinspection Service of the Woodwork Institute.
- C. Regulatory Requirements: Materials and installation shall be in compliance with requirements of the applicable building code and other regulations. Refer to Section 01 41 00 "Regulatory Requirements" for further information.

1.03 SUBMITTALS

- A. Shop Drawings: Submit Shop Drawings showing details of fabrication and installation, including locations of seams in plastic laminate and natural finished surfaces. Include WI Certified Compliance Label on the first page of the Shop Drawings.
- B. Samples:
 - 1. Wood: Submit not less than four samples, each not less than 6-inches by 12- inches in size, of each species and cut of wood exposed in the Work. Submit additional samples for the preparation of finish samples as required by Section 09 91 00 "Painting".
 - 2. Plastic Laminate: Submit samples, not less than 6-inches by 12-inches in size, of each plastic laminate color specified or selected.

3. Color Samples: Submit samples of each material requiring Architect's color selection.
 4. Hardware: Submit samples of each type of finish hardware with required finish. The Architect will retain one sample of each hardware item.
- C. Certifications:
1. Fabrication: Prior to delivery of products to the jobsite, submit a WI "Certified Compliance Certificate" certifying that products to be furnished for this Project will meet the requirements of the grade specified.
 2. Installation: Following installation, submit WI "Certified Compliance Certificate" for installation.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver products suitably wrapped or packaged to protect against damage during shipping, storage, and handling. Do not remove protective coverings until time of installation.
- B. Do not deliver products until the building is enclosed, finish painting and other wet Work is completed and dry, and overhead Work is complete, and the mechanical HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- C. Store products indoors, in a clean and dry location, out of the way of construction activities. Cover with suitable protective covering to keep products clean and to allow air circulation. Protect products from abnormal heat, extreme dryness, humid conditions, sudden changes in temperature, and direct sunlight.
- D. Handle casework units in a manner so as not to damage surfaces or subject the units to stress.
- E. Comply with additional instructions and recommendations of product manufacturers, fabricator-installer, and WI Manual.

1.05 COORDINATION

- A. Coordinate Work of other SECTIONS affecting finish carpentry, including but not limited to, backing requirements for support of finish carpentry; equipment requirements; and mechanical, electrical, and plumbing Work occurring within or adjacent to this Work.
- B. Obtain accurate field measurements prior to preparation of Shop Drawings and fabrication, and show on final Shop Drawings.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General Requirements: Materials shall comply with the requirements of the applicable portions of the WI Manual and shall be of the same quality grade as the quality grades of Work specified, except as otherwise specified herein.
- B. Wood Trim: Clear I-Hard Maple WI Manual "Custom Grade", for transparent finish.
- C. Veneer Plywood: Commercial Hard Maple WI Manual "Custom Grade", for transparent finish.
- D. Casework Core:
 - 1. In compliance with WI Manual "Premium Grade" requirements.
 - 2. Cores for countertops and splashes at areas adjacent to sinks shall be "marine grade" plywood in compliance with DOC PSI and APA with non-telegraphing faces and face grade acceptable to laminate manufacturer, not less than 3/4-inch thick.
- E. Plastic Laminate:
 - 1. General Requirements:
 - a. Material: High-pressure decorative laminate in compliance with NEMA LD3 and as specified.
 - b. Sheet Sizes: Furnish in sizes to minimize joints in each area.
 - c. Adhesive: As recommended by laminate manufacturer.
 - 2. General Purpose Plastic Laminate:
 - a. Types for Exposed Surfaces:
 - 1) Horizontal Surfaces: "HGS" general-purpose grade (nominal 0.048-inch thick).
 - 2) Vertical Surfaces: "VGS" general-purpose grade (nominal 0.028- inch thick).
 - 3) Post-formed Horizontal Surfaces: "HGP" post-forming grade (nominal 0.039-inch thick).
 - 4) Post-formed Vertical Surfaces: "VGP" post-forming grade (nominal 0.028-inch thick).
 - b. Type for Semi-Exposed Surfaces: "CIS" cabinet liner grade (nominal 0.020-inch thick); or thermoset melamine in color as selected by the Architect from the manufacturer's standards.

- c. Type for Concealed Surfaces: "BKH" backer grade (nominal 0.048-inch thick).
- 3. Manufacturer: Wilsonart, or accepted equal.
- 4. Colors, Patterns, and Textures: To be determined.
- F. Tackable Surface: Smooth, seamless, washable, homogeneous, resealing surface consisting of a mixture of granulated natural cork granules, oxidized linseed oil, resinous binders, and dry pigments formed under heat and pressure and calendared onto a natural burlap backing; in colors as selected by the Architect from manufacturer's standards; 1/4-inch thick. Flame spread shall be not more than 75 in accordance with ASTM E84.
- G. Finish Hardware:
 - 1. For Casework: In conformance with -Supplement to Section 14, "Casework - Wood" and Section 15, "Casework - Laminated Plastic" of the WI Manual, except as otherwise specified.
 - a. Door and Drawer Pulls: Stanley Hardware "4484" without bases, US26 polished chrome finish, or accepted equal
 - b. Drawer Slides: Metal type, of manufacture and capacities as specified in the WI Manual.
 - c. Hinges: Concealed "European Style", adjustable, 165 to 170 degree opening, self-closing, adjustable, nickel-plated
 - d. Shelf Standards: Let-in, extending from top to bottom of cabinets.
- H. Anchors and Fasteners: Provide as required for complete fabrication and installation, including wood and sheet metal screws, bolts, toggle bolts, lag screws, expansion shields, finish washers, and similar items; anchors and fasteners shall be electroplated for corrosion resistance.
- I. Other Materials: In compliance with applicable portions of the WI Manual.
- J. Plumbing Fixtures and Fittings within Work: Sinks, faucets, supply and waste fittings, valves, stops, and similar items are specified in Division 22 "Plumbing".
- K. Electrical Devices within Work: Boxes, conduit, conductors, light fixtures, switches, receptacles, communication outlets and devices, and similar items are specified in Division 26 "Electrical".
- L. **Decorative Columns: Architectural Mall Fiberglass or equal column covers 8" diameter round tapered plain columns with standard square cap and base. Cut column as necessary to fit actual length.**

2.02 FABRICATION

- A. General Requirements:

1. Fabricate finish carpentry Work in compliance with the accepted Shop Drawings, applicable portions of the WI Manual for the quality grade specified, manufacturer's printed instructions and recommendations, as indicated, and as specified.
2. Insofar as practicable make cuts in the shop as required to accommodate the Work of other Sections.
3. Shop-fabricate items in whole units or in partial units as most practical for handling and transportation. Assemble partial units in place so that each complete unit becomes a unified whole, visually and structurally. Fabricate fillers and scribe strips of same materials and finishes as items with which they are associated.
4. Accurately machine all parts; completely assemble components by expert cabinetmakers to assure proper fit and finish.
5. Reinforce joints subject to strain, using screws and bolts to assure their retaining tight. At edge-to-edge joined solid wood, use matched tongues and grooves or wood splines, reinforced with dowels if necessary. Glue joints under pressure.
6. Machine or hand sand exposed and semi-exposed surfaces. Make sharp arises slightly rounded, but keep external and internal angles true to detail. Completely remove tool marks, raised grain and other causes of unevenness or lack of smoothness.
7. Fabricate plastic laminated panels of balanced construction. Provide backer grade plastic laminate as required to impart stability and prevent warpage of the assembly.

B. Casework:

1. Construction:
 - a. Fabricate casework with frameless construction with flush overlay doors and drawers.
 - b. Except as otherwise indicated, finish edges of casework bodies, doors, drawers, and exposed shelves with self-edged plastic laminate.
 - c. Provide self-edged plastic edges on plastic laminate countertops, except where other surfacing is indicated.
2. Fabricate cabinets with a minimum inside clear depths indicated.
3. Fabricate cabinets to accommodate mounting methods indicated.
4. Reinforce cabinets to support equipment indicated without visible bow or deflection.

5. Where under-cabinet lighting is indicated, fabricate wall cabinets with front valence to conceal lighting fixture and in a manner to enable fixture to be mounted at the back edge without exposed conduit and connections.
6. Make provisions for passage of plumbing, electrical, and other components concealed within casework.
7. Isolate cabinets for waste containers from adjacent casework to prevent spread of debris and dirt.
8. Provide security panels for all doors and drawers indicated to receive Jocks.
9. Provide finish panels at ends of cabinets and knee spaces.
10. Provide removable panels as indicated and required, of balanced construction, for accessing raceways within casework.
11. Neatly make all required holes and cutouts to template as required to accommodate boxes, conduits, pipes, sinks, fixtures, and other penetrations, and items furnished or provided by other Sections of Work or by others. Make provision for access to plumbing valves and cleanouts for servicing and connection of electrical, communications, and other Work. Seal cuts with clear sealer.
12. Shelves: Fabricate shelves of not less than the following core thickness prior to laminating:
 - a. Shelf spans up to 30-inches: 3/4-inch.
 - b. Shelf spans 30-inches or more: 1-inch.
13. Hardware:
 - a. Prepare casework for hardware in compliance with hardware manufacturer's printed instructions and templates. Make cuts neat and true.
 - b. Install hardware items in compliance with hardware manufacturer's printed instructions after final finishing has been completed. Fit securely and properly Hinges shall fit snugly, flat in mortises or on surfaces as applicable. Turn screws to a flat seat without damage.
 - c. Wire Pulls: Mount pulls horizontally on drawers and vertically on doors.
 - d. Adjust drawers, doors, shelves, and other operable hardware to operate easily and smoothly without binding or excessive play.

14. Toe Spaces: Provide toe spaces, 3-inches deep by 4-inches high at base and tall cabinets, unless indicated otherwise. Provide solid wood banding at lower edge of veneered panels at toe spaces. Finish base materials are specified in other Sections.
15. Panel Closures: Unless otherwise indicated, provide matching panels above wall cabinets to ceiling. Align face of panels with face of wall cabinet door, or edge of cabinets if no door.
16. Countertops and Work Surfaces:
 - a. General Requirements:
 - 1) Provide plastic laminate covered countertops and work surfaces, unless indicated otherwise.
 - 2) Neatly make all required holes and cutouts to template as required to accommodate sinks, fittings, toilet accessories, hardware, and other penetrations and items furnished or provided by other Sections of Work or by others.
 - 3) Include provisions for concealed attachment to base cabinets, walls, knee braces, and other supports.
 - b. Plastic Laminated:
 - 1) Fabricate plastic laminated countertops and work surfaces of balanced construction with square self-edging, unless indicated otherwise.
 - 2) Provide 4-inch high by 3/4 inch thick back and side splashes with square butt joint at countertop and square self-edging, unless indicated otherwise.
 - 3) Provide 1-inch radius on exposed corners of countertops and work surfaces.
 - 4) For countertops and work surfaces not supported by base cabinets, provide plastic laminate-covered knee braces evenly spaced at maximum 4-feet on center.
 - 5) Seal holes and cutouts with clear sealer.

C. Miscellaneous Millwork and Trim:

1. Fabricate members to dimensions, profiles, shapes, and details indicated.
2. Fabricate in as long units as practicable to minimize field cutting and joining. Where necessary to cut and fit at Project Site provide materials with ample allowance for cutting and fitting.

3. Rout or groove backs of flat members as required for accurate fit; ken f backs of other wide flat members except plywood or veneered members.
4. Distribute defects allowed in quality grade specified to best overall visual advantage.

2.03 FINISHES

- A. Shop-Applied Transparent Finish: Sinclair Paint Co. products as specified, or accepted equal.
 1. 1st Coat: Stain as selected.
 2. 2nd Coat: Wood filler; omit on close grain woods.
 3. 3rd Coat: "650-00 Pen-Chrome Hi-Lustre", thinned 10 percent.
 4. 4th Coat: "650-01 Pen-Chrome Satin Varnish".
 5. 5th Coat: As for fourth coal

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify that surfaces to receive finish carpentry are satisfactory for installation.
- B. If unsatisfactory conditions exist, do not begin installation until such conditions have been corrected.

3.02 PREPARATION

- A. Protection: Protect products and adjacent surfaces from damage during installation of finish carpentry.
- B. Preparation:
 1. Remove products from their protective wrappings as near the area of installation as possible.
 2. Prior to installation, allow materials and products to acclimate to jobsite conditions in compliance with requirements of the WI Manual and recommendations of applicable manufacturer.

3.03 BLOCKING, FURRING AND NAILERS

- A. Provide solid wood blocking, furring, and nailers as indicated and where necessary to obtain required lines and levels in finished surface and to provide solid nailing under edges and joints.

- B. Fit closely and accurately; use wood shims wherever necessary to form adequate fasteners.
- C. Secure to concrete with expansion bolts, unless otherwise indicated. Secure to metal framing with sheet metal screws, unless otherwise indicated.

3.04 INSTALLATION

A. General Requirements:

1. Install finish carpentry in compliance with the requirements of the WI Manual, accepted Shop Drawings, manufacturers' printed instructions, as indicated, and as specified.
2. Set Work straight, plumb, and level, with tight joints between sections or units; scribe to wall and other surfaces as required.
3. Wherever possible install Work with concealed fasteners. Install without splitting materials; pre-drill as required. Completely fill or putty holes; leave smooth and flush with adjacent surfaces.

B. Miscellaneous Millwork and Wood Trim:

1. Set and secure materials and components in place plumb and level.
2. Scribe work abutting other components.
3. Make tight connections between members. Joints shall be smooth, flush, and hairline tight.
4. Scarf cut running joints. Cope trim at returns and miter-cut at corners. Produce joints with full surface contact throughout length of joint.
5. Securely attach trim to surrounding construction with concealed fasteners wherever possible. Where exposed fasteners are necessary, countersink fine finishing nails in uniform pattern without splitting wood and apply wood filler matching color of adjacent wood in fastener indentations.
6. Field finishing is specified in Section 09 91 00 "Painting".

C. Casework:

1. Except for those made in the shop, make all required holes and cutouts in casework as required for pipes, conduits, and other penetrations, or inserts provided as part of the Work of other Sections. Make provision for access to plumbing valves, cleanouts, and connection of electrical Work. Seat cuts with clear sealer.
2. Secure units to structural backing to resist both gravity and seismic forces in compliance with the regulatory requirements, but not farther than 16-inches on center and not more than 2-inches from each corner

for wall-hung units and floor- supported units over 6-feet tall, and not farther than 32-inches on center for floor- supported base units. Secure freestanding units to floor construction with concealed fasteners.

3. Provide fillers and scribe strips of same materials and finishes as adjacent casework so that casework fronts and sides present finished and unbroken surface to adjacent casework units or walls. Cut scribe strips so that no gap greater than 1/16-inch exists where casework is fitted against flat or irregular surfaces.
4. Install countertops and work surfaces so they will lie in one plane, without gaps between tops and casework and without gaps between sections.
5. Hardware:
 - a. Install and lubricate field-installed hardware in compliance with manufacturer's printed instructions.
 - b. Install grommets where indicated. Install additional grommets in locations as directed. At wet areas, secure and seat grommets in place with concealed clear silicone sealant. Turn over extra grommets to the Owner.

3.05 CLEANING AND REPAIRS

- A. Following completion of installation, remove dirt and other adhering foreign matter from installed materials.
- B. Clean interior and exterior surfaces of casework and other items of finish carpentry and clean and polish hardware in compliance with manufacturers' printed instructions and recommendations.
- C. Remove materials damaged beyond acceptable repair or stained beyond cleaning and provide new acceptable Work at no additional cost to the Owner.

3.06 COMPLETION

- A. When complete, finish carpentry Work shall be plumb and level, securely attached to supporting construction, dean, and free from structural defects, distortions, open joints, marks, nicks, scratches, stains, and other defects and damage.
- B. Doors, drawers, and moving hardware shall operate freely, easily, and smoothly and without binding or excessive play.
- C. Finishes shall match those specified or accepted by the Architect.
- D. Joints in panels and trim shall be smooth, flush and free from offsets and gaps.

3.07 PROTECTION

- A. Protect finish carpentry from damage and deterioration until time of completion and acceptance by the Owner. Remove protective coverings before inspection for Substantial Completion.
- B. Do not stand on or otherwise use casework, countertops, or other finish carpentry for storage or as a work surface.
- C. Do not permit finish carpentry to be exposed to continued construction activity without adequate protection.
- D. Maintain temperature and humidity conditions required to protect the Work.

END OF SECTION

SECTION 07 27 10

BUILDING PAPER

PART 1-GENERAL

1.01 DESCRIPTION

- A. This SECTION describes the requirements for furnishing and installing building paper and associated materials for applications other than Lath and Plaster.
- B. Tyvek associated with Portland Cement Plastering is specified in SECTION 09 22 37 LATH AND ACCESSORIES.
- C. Wall membranes for use with rain screen wall cladding is specified in SECTION 07 29 00 AIR AND MOISTURE BARRIER.

1.02 REGULATORY REQUIREMENTS

- A. Materials and installation shall be in compliance with requirements of the applicable building code and other regulations. Refer to SECTION 01 41 00 REGULATORY REQUIREMENTS" for further information.

1.03 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Provide factory wrapping, packaging, and other means necessary to prevent damage and deterioration of products during shipment, handling, and storage.
- B. Maintain protective coverings in place and in good repair until removal is necessary for the Work.
- C. Handle and store materials in compliance with the manufacturer's printed recommendations in a manner to prevent damage and deterioration.
- D. Comply with additional requirements of the manufacturer.

1.04 JOB CONDITIONS

- A. Surfaces to receive building paper shall be free from projecting nails, wires, and other conditions that might damage paper.
- B. Surfaces to be covered shall be dry, and shall have dried in fair weather not less than 3 days following any wetting by rain, frost, snow, or otherwise.

PART 2- PRODUCTS

2.01 MATERIALS

- A. Building Paper: Non-perforated asphalt-saturated organic felt in compliance with ASTM D226 Type 1 (commonly called No. 15 asphalt felt).
- B. Associated Materials:
 - 1. Flexible Flashing: Fortifiber Building Systems "Fortitlash" self-adhesive flashing membrane, 25-mils thick, width as required to suit application, or accepted equal.
 - 2. Fastenings:
 - a. Nails, staples, hog rings, or tie wire to suit framing or backing involved.
 - b. Pressure-sensitive tape and/or adhesive as recommended by the paper manufacturer may be used where appropriate.

PART 3-EXECUTION

3.01 INSPECTION

- A. Verify that conditions are satisfactory for the installation of building paper and associated materials.
- B. If unsatisfactory conditions exist do not begin installation until such conditions have been corrected.

3.02 INSTALLATION - BUILDING PAPER

- A. General:
 - 1. Install building paper horizontally in compliance with the manufacturer's printed instructions and as specified.
 - 2. Provide paper at locations indicated and for locations specified whether or not indicated.
 - a. Install paper in single-layer installation method, except as otherwise specified.
 - b. Install paper in double-layer installation method, except as otherwise specified.
 - 3. Install paper in longest lengths practical to minimize number of joints.
 - 4. Install each layer of paper from lowest level, working up shingle fashion. Lap paper overhead flashings and base screeds and under sill flashings, and similarly treat penetrations and other details as necessary for weather protection.

5. Secure paper with minimum number of fasteners to hold paper in place until covered by other materials and prevent tearing and blow-off-
- B. Horizontal Joints: Lap paper not less than 2-inches, shingle fashion, to shed water.
- C. Corners: Wrap paper to overlap not less than 12-inches on each side of corner.
- D. Intermediate Vertical Joints:
 1. Lap paper not less than 6-inches.
 2. In adjacent sheets, offset joints not less than 48-inches.
 3. In alternate sheets, offset joints not less than 24-inches.
 4. Do not locate two joints at same vertical alignment.

3.03 INSTALLATION - FLEXIBLE FLASHING

- A. Openings:
 1. Individually flash each opening head, jamb, and sill with flexible flashing in 12- inch wide strips and in lengths equal to rough opening dimension plus 12-inches.
 2. Install with inner edge of flexible flashing turned into opening for full depth of wall framing, and with outer edge turned under wall paper at heads, and over top of wall-building paper at jambs and sills.
 3. At opening corners, clip flexible flashing strips as required, neatly shape and fit into corners, and wrap and overlap ends of adjacent strips not less than 6-inches.
 4. Press flexible flashing firmly in place to achieve full bond with substrate.
- B. Penetrations:
 1. Provide flexible flashing at joints caused by pipes, conduits, electrical boxes, and similar items penetrating building paper to create a weather tight seal between penetrating objects and building paper.
 2. Press flexible flashing firmly in place to achieve full bond with substrate.

3.04 REPAIRS

- A. Repair tears and punctures in building paper by covering with another layer of building paper, lapped as specified, or by covering with strips of flashing membrane as specified. Make repairs before concealment by other Work.
- B. Remove and replace materials that cannot be successfully repaired by specified minor repair procedures.

3.05 COMPLETION

- A. When complete, building paper and flashing membrane shall be flat, without excessive warps and bulges, and free from unnecessary holes, cuts, tears, and other damage and defects.

3.06 PROTECTION

- A. Protect building paper and flashing membrane from damage, deterioration, and displacement until permanently covered by other materials.
- B. Provide temporary coverings where materials are subject to abuse and cannot be protected by permanent construction immediately after installation.

END OF SECTION

SECTION 07 29 00

AIR AND MOISTURE BARRIER

PART I GENERAL

1.01 DESCRIPTION

- A. This SECTION describes the requirements for furnishing and applying air and moisture barriers.

1.02 QUALITY ASSURANCE

- A. Source Limitations: Obtain air and moisture barrier materials from a single manufacturer.
- B. Qualifications, Applicator: Applicator shall be experienced in the application of air and moisture barriers of the types required for this Project.
- C. Regulatory Requirements: Materials and application shall be in compliance with requirements of the applicable building code and other regulations. Refer to **SECTION 01 41 00 REGULATORY REQUIREMENTS** for further information.
- D. **Pre-Application** Conference: Schedule and conduct a pre-application conference as specified in **SECTION 01 31 00 PROJECT MANAGEMENT AND COORDINATION**.
- E. Testing Laboratory Services: As specified in Part 3 of this SECTION.
- F. **Coordination with Section 09 22 37 Lath and Accessories.**
- G. **Coordination with Section 07 27 10 Building Paper**
- H. **Coordination with Section 07 38 00 Water Vapor Emission and Alkalinity Control System for Concrete Slabs.**
- I. **Coordination with Section 09 24 00 Portland Cement Plastering.**

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's printed descriptive and technical data, clearly marked to show specific products, materials, test reports, and other pertinent information. Include manufacturer's printed application instructions.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Provide factory wrapping, packaging, and other means necessary to prevent damage and deterioration of products during shipment, handling, and storage.
- B. Store materials in the original packages or containers until ready for use. Store roll goods on end. Keep away from high heat, flames, and sparks.

- C. Comply with additional requirements of the manufacturer.

1.05 JOB CONDITIONS

- A. Proceed with application of air and moisture barriers only after substrate preparation is complete and has been inspected and accepted in writing by the manufacturer's authorized technical representative.
- B. Apply materials only in dry weather and when air and surface temperatures are above 40 degrees Fahrenheit, unless otherwise recommended in writing by the manufacturer.

1.06 WARRANTY

- A. Furnish manufacturer's standard printed warranty covering performance of air and moisture barrier to the Owner.
- B. Warranty period shall be ten (10) years from date of Substantial Completion.

PART 2-PRODUCTS

201 MATERIALS

- A. Air and Moisture Barrier DuPont "Tyvek Commercial" high-performance, spun bonded polyolefin, non-woven, non-perforated membrane with the following performance characteristics, or accepted equal:
 - 1. Air Penetration: 0.001 cfm/square foot at 75 Pa, when tested in accordance with ASTM E2178. Type I per ASTM EI 677.
 - 2. Water Vapor Transmission: 28 perms, when tested in accordance with ASTM E96, Method B.
 - 3. Water Penetration Resistance: 280 cm when tested in accordance with AATCC Test Method 127.
 - 4. Basis Weight: 2.7 ounces/square yard, when tested in accordance with TAPPI Test Method T-410.
 - 5. Air Resistance: Air infiltration at over 1500 seconds, when tested in accordance with TAPPI Test Method T-460.
 - 6. Tensile Strength: 38135 pounds/inch, when tested in accordance with ASTM D882, Method A.
 - 7. Tear Resistance: 12/10 pounds, when tested in accordance with ASTM D1117.
 - 8. Surface Burning Characteristics: Class A, when tested in accordance with ASTM E84, Flame Spread Index shall be ID or less and Smoke Developed Index shall be 10 or less.

B. Associated Materials:

1. Sealing Tape: DuPont "Tyvek Tape, 3-inches wide, or as recommended in writing by the membrane manufacturer.
2. Fasteners: Corrosion-resistant screws with plastic caps, of types and sizes to suit substrates, as recommended in writing by the membrane manufacturer.
3. Flexible Flashing: DuPont "FlexWrap", or accepted equal recommended in writing by the accepted membrane manufacturer. Furnish with primer as recommended by the manufacturer to suit substrates and job conditions.
4. Elastomeric Sealant: In compliance with ASTM C920 and as recommended in writing by the membrane manufacturer to suit job conditions.

PART 3- EXECUTION

3.01 INSPECTION

- A. Verify that conditions are satisfactory for the application of air and moisture barrier and associated materials.
- B. Verify that other Work that penetrates surfaces to receive air and moisture barrier has been completed and inspected as required.
- C. Verify that surfaces to receive air and moisture barrier are dry, clean, smooth, fully fastened, and free of voids, damaged areas, and unsupported areas.
- D. If unsatisfactory conditions exist, do not begin application until such have been corrected.

3.02 PREPARATION

- A. Protection:
 1. Protect adjacent surfaces and finishes from damage during application of air and moisture barrier.
 2. Protect materials from damage during field handling and application.
- B. Surface Preparation:
 1. Prepare and prime surfaces in compliance with manufacturer's printed instructions.
 2. Remove dirt, fasteners, wire, other sharp protrusions and other matter that might damage the air and moisture barrier or hinder the placement or regularity of the application.

3.03 APPLICATION

- A. General: Apply air and moisture barrier and associated materials in compliance with manufacturer's printed instructions and recommendations, as indicated, and as specified.
- B. Air and Moisture Barrier:
 - 1. Apply barrier in a horizontal manner starting at the lower portion of the wall surface with subsequent layers installed in a shingling manner to overlap lower layers so horizontal laps shed water. Maintain weather barrier plumb and level.
 - 2. Extend lower edge of weather barrier over sill plate interface 6 inches. Secure to foundation with sealant.
 - 3. Stagger end joints not less than 24-inches in adjacent courses. Lap sheet edges and ends not less than 6-inches. Extend membrane 12-inches around corners.
 - 4. Fit barrier tightly around penetrations in compliance with manufacturer's printed recommendations.
 - 5. Continue barrier into openings in the wall and terminate as indicated or recommended by manufacturer.
 - 6. Apply sealing tape at vertical and horizontal overlapping seams in the barrier.
- C. Flexible Flashing:
 - 1. Prime surfaces as required and install flexible flashings in compliance with the manufacturer's printed instructions and as indicated.
 - 2. Lap joints between adjacent sheets not less than 3-inches and in a manner to shed water. Seal seams using manufacturer's approved methods.
 - 3. Mechanically fasten flashing at vertical terminations using stainless steel fasteners and flat washers recommended in writing by the manufacturer.

3.04 REPAIRS

- A. Repair tears, punctures, and other minor damage in air and moisture barrier by covering damaged areas with a patch of the air and moisture barrier sized to extend 6-inches in all directions from the perimeter of the damaged area with edges continuously sealed with sealing tape. Comply with the manufacturer's printed instructions.
- B. Remove materials that cannot be successfully repaired by specified minor repair procedures and provide new acceptable Work at no increase in Contract Sum or Contract Time.
- C. Make repairs before concealment of other Work concealing the barrier.

3.05 COMPLETION

- A. When complete, air and moisture barrier shall be flat, without excessive warps or bulges, and free from holes, cuts, tears, and other damage and defects.
- B. Flashings and sealing tape shall be fully adhered in place.

3.06 PROTECTION

- A. Protect air and moisture barrier from damage, deterioration, and displacement until permanently covered by other materials. Do not expose air and moisture barrier to sunlight and weather in excess of that recommended in writing by the manufacturer.
- B. Provide temporary coverings where material is subject to abuse and cannot be protected by permanent construction immediately after application.

END OF SECTION

SECTION 07 38 00

WATER VAPOR EMISSION AND ALKALINITY CONTROL SYSTEM FOR CONCRETE SLABS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This SECTION describes the requirements for:
1. Retaining and paying an independent Testing Agency to perform water vapor emission and alkalinity testing on new concrete slabs to receive:
 - a. Resilient flooring specified in SECTION 0965 00 "RESILIENT FLOORING".
 - b. Carpet tile specified in SECTION 0968 16 "TILE CARPETING".
 2. Furnishing and applying water vapor emission and alkalinity control system treatment to predetermined levels when testing reveals vapor emission and/or alkalinity levels exceed specified maximums.

1.02 QUALITY ASSURANCE

- A. Qualifications, Manufacturer:
1. Manufacturer shall have not less than 5 years experience producing moisture vapor and alkalinity control emission products and shall have a warranty program covering costs for labor and materials for repair or replacement of water vapor emission and alkalinity control system and finish floor coverings and coatings.
 2. Manufacturer shall carry and maintain not less than five-million dollar (\$5,000,000) per occurrence product liability insurance policy from a carrier rated "A-Excellent" by the A. M. Best Co. or accepted equal rating system, and naming the Owner, Architect, and Contractor as co-insured.
- B. Specified Manufacturer: Floor Seal Technology, Inc. is specified to establish a standard of quality and performance. Provide specified products, or accepted equal.
- C. Qualifications, Applicator Manufacturer's trained personnel or factory-trained and authorized applicator. Applicator shall have not less than 5 years experience in the application of water vapor emission and alkalinity control systems. Applicator shall designate a single qualified individual as foreman who shall be on Site at all times during testing and application.
- D. Pre-Commencement Meeting: Refer to requirements under SECTION 01 31 00 PROJECT MANAGEMENT AND COORDINATION".

- E. Regulatory Requirements: Products and application shall be in compliance with the applicable building code and other regulations. Refer to SECTION 01 41 00 "REGULATORY REQUIREMENTS" for further information.

1.03 SUBMITTALS

- A. Manufacturer's Recommendations: Submit letter signed by manufacturer recommending specific treatment products.
- B. Product Data: Submit manufacturer's printed product data on treatment materials proposed for use. Include independent test reports and manufacturer's printed application instructions.
- C. Test Reports: Testing Agency shall submit a moisture and alkalinity report for each test area. For each report, include name of company performing the tests; Project name; test number; types of testing instruments used; floor plan of building with each test location identified; starting date, time, and beginning weight; estimate of building temperature; stopping date, time, and ending weight and computed pounds of emission including equations.
- D. Applicator's Qualifications: Submit evidence that applicator complies with specified requirements.
- E. Warranty: Submit a specimen copy of manufacturer's warranty.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store materials in manufacturer's original, unopened containers and packaging, clearly identified with manufacturer's name and the name and type of material.
- B. Store materials in a dry location with adequate ventilation and protected from moisture absorption and temperature extremes, as required by the manufacturer.
- C. Comply with additional requirements of the manufacturer.

1.05 PROJECT CONDITIONS

- A. Maintain areas to receive water vapor emission and alkalinity control system treatment materials within a temperature range of 65 to 85 degrees Fahrenheit for a period of time before, during, and after application as required by the manufacturer and in environmental conditions that are representative of the environmental operating conditions of the finished Project.

1.06 SYSTEM WARRANTY

- A. Furnish manufacturer's standard limited system warranty to the Owner in which manufacturer warrants water vapor emission and alkalinity control system and associated topical moisture vapor emission compliance procedures to be free from defects in material performance and application workmanship.

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- B. Warranty shall cover failure of finish flooring due to concrete moisture vapor emission and/or alkalinity. Warranty coverage shall include cost of materials and labor for the — removal and replacement of finish flooring materials and water vapor emission and alkalinity control system components providing failure is due to unacceptable alkalinity and/or water vapor emissions within the limits of the applied system. Perform warranty Work at no additional cost to the Owner.
- C. Warranty period shall be ten (10) years from date of Substantial Completion.

PART 2 — PRODUCTS

2.01 TESTING MATERIALS

- A. Vapor Emission Test Kit: Anhydrous calcium chloride moisture vapor test kit as manufactured by Vaprecision Testing Systems, telephone (800) 449-6194, or accepted equal recommended in writing by affected flooring material manufacturer.
- B. Concrete pH Test Kit: As manufactured by Vaprecision Testing Systems, telephone (800) 449-6194, or accepted equal recommended in writing by affected flooring material manufacturer.
- C. Water: Clear distilled or de-ionized water.

2.02 WATER VAPOR EMISSION AND ALKALINITY CONTROL SYSTEM

- A. Product: Floor Seal Technology, Inc. water vapor emission and alkalinity control system of the type recommended in writing by the manufacturer for each area of application including Project conditions, concrete mix design, age of concrete substrate, test results, type of finish flooring, and other factors to ensure compliance with the specific flooring manufacturer's requirements for water vapor emission and alkalinity. For the basis of the Unit Price specified in {SECTION 01 22 00 "UNIT PRICES" furnish "MES 100", or accepted equal
- B. Cementitious Patching Compound: Ardex, 100 percent Portland cement-based product with minimum 4000 psi rating, of the type recommended in writing by the manufacturer and suitable for the type of each specific finish flooring.

PART 3- EXECUTION

3.01 EXAMINATION

- A. Verify that conditions are satisfactory for water vapor emission and alkalinity testing and application of materials.
- B. Do not begin water vapor emission and alkalinity testing until unsatisfactory conditions are corrected.

3.02 PREPARATION

- A. Protect adjacent surfaces from damage due to water vapor emission and alkalinity control Work.
- B. Mask and otherwise protect walls and equipment during preparation, testing, and application.

3.03 TESTING

- A. Preparation: Clean surfaces to be tested in compliance with the manufacturer's printed instructions. Remove debris, dirt, dust, residue, curing compounds, sealers, and other foreign materials as required.
- B. Vapor Emission Testing:
 - 1. Perform pre-application testing of cementitious slabs by quantitative anhydrous calcium chloride testing prior to the preparation for and application of accepted water vapor emission and alkalinity control system. Tests shall be performed by qualified testing personnel of the Testing Agency in compliance with ASTM F1 869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chlorides, the test kit manufacturer's printed recommendations and instructions, and the applicable flooring manufacturer's printed recommendations and instructions.
 - 2. Perform not less than 3 tests for the first 1000 square feet of flooring and not less than 1 additional test for each additional 1000 square feet of flooring. Conduct additional tests around the perimeters of the room, at columns, and where moisture may be evident. Protect tests from damage and disruption until concluded-
 - 3. Tests shall determine the change in weight of moisture-absorbing anhydrous calcium chloride and the results shall represent the amount of moisture transmitting out of the concrete slab area. The value shall be expressed in pounds and shall be equivalent to the weight of the water that is emitted from a 1000 square feet concrete slab area in a 24-hour period of time.

4. For each test, accurately test location, test conditions, exposure times, test results, and other pertinent information. Furnish copies of record to the Architect and Owner upon request.
- C. Alkalinity Testing: Conduct tests for alkalinity level in compliance with the manufacturer's printed instructions.

3.04 SURFACE PREPARATION

- A. Prepare surfaces to receive water vapor emission and alkalinity control system materials in compliance with the manufacturer's printed instructions and recommendations and as specified.
- B. Scarify surfaces and prepare control joints and cold joints with manufacturer's recommended joint-membrane dispersion system.
- C. Clean surface and treat irregularities with a 100 percent Portland cement-based patching compound and cementitious fill compatible with specified vapor emission and alkalinity control system. Comply with tolerances specified for applicable finish flooring.

3.05 APPLICATION OF WATER VAPOR EMISSION AND ALKALINITY CONTROL SYSTEM

- A. Apply accepted water vapor emission and alkalinity control system if an hydrous calcium chloride testing reveals water vapor emission levels as follows:
 1. Greater than 3 pounds per 1000 square feet for resilient flooring unless further restricted by applicable flooring manufacturer used in SECTION 09 65 00 RESILIENT FLOORING.
 2. Greater than 5 pounds per 1000 square feet for carpet tile unless further restricted by the applicable flooring manufacturer used in SECTION 09 68 13 CARPET TILES.
- B. General: Apply system materials in compliance with manufacturer's printed instructions and as specified.
- C. Water Emission and Alkalinity Control System: Apply materials by squeegee and roller method to saturate the concrete surface. Coverage rates shall be in compliance with manufacturer's printed recommendations based on concrete density and porosity. Allow materials to thoroughly penetrate and cure.
- D. Cementitious Patching Compound: Mix and apply cementitious patching compound in compliance with the manufacturer's printed instructions. Apply compound in a single pour to a uniform thickness of not less than 1/16-inch.

3.06 RE-TESTING AND REMEDIAL ACTION

- A. Re-test treated areas for compliance with required vapor emission levels specified hereinbefore.

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- B. If re-testing reveals emission levels in excess of specified amounts, furnish and install additional materials and repeat testing until specified levels are achieved.

3.07 PROTECTION

- A. Protect concrete emission and alkalinity control system materials from damage until permanent finish flooring is in place and thereafter as required until time of completion and acceptance by the Owner.

END OF SECTION

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store stairway until installation inside under cover in manufacturer's unopened packaging. If stored outside, under a tarp or suitable cover.
- B. Store roof hatches in a clean, dry, well-ventilated, and protected location until ready for use in the Work.
- C. Maintain storage spaces and stored materials in dry condition at all times.
- D. Comply with additional requirements of the manufacturer.

1.06 COORDINATION

- A. Coordinate installation of roof hatches with roof openings and installation of roofing, flashing, and other Work

1.07 WARRANTY

- A. Roof hatches shall be warranted by the manufacturer against defects in materials and workmanship for live (5) years from date of Substantial Completion.
- B. Limited Warranty: One year against defective material and workmanship, covering parts only. Defective parts, as deemed by the manufacturer, will be replaced at no charge, freight excluded, upon inspection at manufacturer's plant.

1.08 MAINTENANCE

- A. Under normal usage, the hatches shall require no preventive maintenance.
- B. No "Spare Parts" shall be required.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer: Precision Ladders, LLC, P. O. Box 2279; Morristown, www.PrecisionLadders.com TN: 37816-2279; Tel: 423-586-2265; Fax: 423-586-2091, or accepted equal.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.02 ROOF HATCH MATERIALS

- A. CURB

1. Formed from 14 gauge galvanized steel of lock forming quality per ASTM A-525 with G90 coating (.090 Aluminum H-14 3003 on aluminum models).
2. Sheathed with 1" of rigid fiber board insulation.
3. Height of 12" unless indicated otherwise on drawings.
4. 4" integral flange for securing to roof.
5. Hinges connecting curb to door shall be 1/8", 2 piece formed steel with 3/8" pivot pin.
6. Extruded rubber gasket within a 20 gauge extruded aluminum track shall be securely attached to the frame to make the unit weather tight.

B. COVER

1. Formed from 14 gauge galvanized steel of lock forming quality per ASTM A-525 with G90 coating (.090 Aluminum H-14 3003 on aluminum models).
2. Liner shall be 22 gauge galvanized steel with G90 coating (.040 Aluminum H-14 3003 on aluminum models).
3. Insulation between cover and liner to be 1" thick U.L. plain fiberglass 0.75# density.
4. Lid shall be reinforced as required with 11 ga. steel channel.
5. A one point cab lock is to be provided with a built-in inside handle on units with a length of 4' 6" or less. On units of greater length, a 2 point slam lock will be used.
6. Exterior of cover shall be devoid of hardware with the exception of the outside handle.
7. Outside handle shall be vinyl coated, steel T-handle.
8. Automatic hold-open device shall be formed from 3/16" steel flat bar and 1/2" diameter steel round stock with a vinyl grip.
9. Padlock provisions provided on both interior and exterior of unit.

C. PRESSURE CONTROL

1. Opening/closing assistance/resistance on all models shall be provided with pressure intensifiers consisting of a telescoping tube; the top (outer) tube shall be 1 5/16", bottom (inner) tube shall be 1 1/2". Tubes shall be cadmium plated and chromate-sealed.

D. HARDWARE

1. Corrosion resistant hardware and fasteners is standard.

E. MANUFACTURED UNITS

1. The roof is a Model PH-G (for galvanized steel) or PH-A (for aluminum) followed by the opening size in feet and inches. For example: PH-G 2'6" x 3'0"

F. ACCESSORIES

1. Optional safe exit handrail to facilitate getting on or off of roof.

G. FABRICATION

1. The hatch is completely fabricated ready for installation before shipment to the site.

H. FINISH

1. Red oxide primer.

I. SOURCE QUALITY CONTROL

1. All products inspected at factory in an ISO 9002 environment.
2. All products tested in factory for proper operation before shipment.

2.03 MANUAL DISAPPEARING STAIRWAY.

A. Manual Disappearing Stairway.

1. Standard Model: Super Simplex Disappearing Stairway as manufactured by Precision Ladders LLC. Model SS/AH-108 (ceiling height in inches) with ceiling panel and roof hatch.
2. Standard Model: Super Simplex Disappearing Stairway as manufactured by Precision Ladders LLC. Model SS/B-108 (ceiling height in inches) with ceiling panel only.

B. Performance Standard: Unit shall comply with ANSI A14.9, Commercial Type, for rough openings between 25-1/2 inches to 39 inches. Residential Type for rough openings between 21 1/2" and 25". Stairway capacity shall be rated at 500 lbs.

C. Accessories:

1. Steel pole to aid opening and closing stairways.
2. Stairs for ceiling heights 9' -10" – 12' -0" shall be equipped with a patented Precision Fold Assist to aid in folding and unfolding of sections. Stairs for ceiling heights 12' 1" – 13'6" shall be equipped with 2 Fold Assists. Precision Fold-Assist is optional on stairways for ceiling heights of 9' 9" and below.

D. Components:

1. Ceiling Opening:

- a. Ceiling height of 9' 9" or less requires an opening of 30" x 54".

- b. Ceiling heights from 9' 10" – 12' 0" require opening of 30" x 64".
 - c. Ceiling heights from 12' 1" – 13' 6" require opening of 22 ½" x 72".
2. Stairway Stringer: 6005-T5 Extruded aluminum channel 5" x 1" x 1/8"; tri-fold design; steel blade type hinges; adjustable feet with plastic Mar-guard. Pitch shall be 63°.
 3. Stairway Tread: 6005-T5 extruded aluminum channel 5 3/16 inches by 1 1/4 inches by 1/8 inch. Depth is 5 3/16 inches. Deeply serrated top surface. Riser Height: 9-1/2 inches. Clear Tread Width for Standard Width: 19-1/2 inches.
 4. Railing: Aluminum bar handrail riveted to stringers, upper section only.
 5. Frame:
 - a. If ceiling to floor (or roof deck) above is 12" or less, frame shall be 1/8" steel formed channel, 6" deep.
 - b. When ceiling to floor (or roof deck) above is greater than 12", the frame shall be 1/8" steel, 63° (with built-in steps) on the hinge end, 90° on the other end, custom depth to fill distance from ceiling to floor above. This custom frame will require a longer opening in the floor above than is required at the ceiling level.
 6. Door Panel:
 - a. Standard (non-fire rated) door shall be constructed of 1/8 inch (3 mm) aluminum sheet attached to stairway frame with a steel piano hinge. Door overlaps bottom flange of frame. Eye bolt accommodates pole for opening and closing door.
 - b. On fire-rated models, the door panel shall be constructed of 20 gauge steel and have a 2 hour fire rating for use in fire-rated ceiling assemblies as issued by Warnock-Hersey or other appropriate independent testing/licensing agency.
 7. Hardware:
 - a. Steel blade type hinge connecting stringer sections. Zinc plated and chromate sealed.
 - b. Steel operating arms, both sides. Zinc plated and chromate sealed.
 - c. Double acting steel springs and cable, both sides.
 - d. Rivets rated at 1100 lb (499 kg) shear strength each.
 - e. Steel section alignment clips at stringer section joints.

- f. Molded rubber guards at corners of aluminum door panel.
8. Finishes:
- a. Mill finish on aluminum stairway components.
 - b. Prime coat on frame.

2.03 FABRICATION

- A. Completely fabricate ladder ready for installation before shipment to the site.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until rough opening and structural support have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Examine materials upon arrival at site. Notify the carrier and manufacturer of any damage.

2.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

3.03 PROTECTION

- B. Protect installed products until completion of project.
- C. Touch-up, repair or replace damaged products before Substantial Completion.

3.04 FIELD QUALITY CONTROL

- A. The manufacturer has representatives in all areas of the United States and Canada. For the name of the closest representative, call (800) 225-7814.

END OF SECTION

SECTION 07 84 00

FIRESTOPPING

PART I - GENERAL

1.01 DESCRIPTION

- A. This SECTION describes the requirements for furnishing and installing firestopping where new Work from Building 202 penetrates fire-rated construction in Building 200.

1.02 QUALITY ASSURANCE

A. Source Limitations:

1. Do not use more than two manufacturers for the Project, unless accepted in writing in advance by the Architect.
2. Use only materials from one manufacturer where more than one component is involved in system.

- B. Applicator Qualifications: Applicators shall be trained by applicable manufacturer and be able to document experience installing UL Listed or ITW-WH Listed fire stopping materials in accordance with ASTM E119, ASTM E814, ASTM E1966, and UL 1479.

C. Performance:

1. Firestopping materials shall be asbestos-free, lead-free, and capable of maintaining an effective barrier against flame, smoke, and gases in compliance with applicable code requirements and requirements of ASTM E84, ASTM E119, ASTM E814, ASTM E1399, ASTM E1966, UL 1479, and UL 2079. Do not use any product containing solvents or that requires hazardous waste disposal.
2. Materials shall have been tested by a nationally recognized testing laboratory to provide fire rating equal to that of the construction.
3. Firestopping systems shall be capable of preventing passage of smoke, gasses, and flames, and meet hose stream requirements in accordance with ASTM E814.

D. Regulatory Requirements:

1. Materials and installation shall be in compliance with the applicable building code and other regulations. Refer to SECTION 0141 00 REGULATORY REQUIREMENTS for further information.
3. Do not use any product containing solvents or that requires hazardous waste disposal.
4. Materials shall have a California State Fire Marshall's Building Materials Listing Number and an ICBO Evaluation Services Report.

1.03 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in the manufacturers' original, unopened containers or packages with manufacturer's name, product identification, lot numbers, UL-labels, and mixing and installation instructions, as applicable.
- B. Store materials in the original, unopened containers or packages, and under conditions recommended by manufacturers.
- C. All firestopping materials shall be installed prior to the expiration date of shelf life.

1.04 JOB CONDITIONS

- A. Follow manufacturer's instructions for temperature, ventilation, and other conditions for mixing and installing foam seals.
- B. Follow manufacturer's precautions when using materials considered toxic or otherwise hazardous.
- C. Do Not Install Firestopping Until:
 - 1. Cementitious Fireproofing Work, if any, has been completed, including repairs thereof. If firestopping is to abut cementitious fireproofing, remove fireproofing as required to assure proper bonding.
 - 2. Building is sufficiently enclosed or protected against adverse weather conditions.
 - 3. Supporting framing and surrounding construction is thoroughly dry.

PART 2- PRODUCTS

2.01 GENERAL

- A. Firestopping shall meet the specified requirements, shall have been tested, and shall be appropriate for the Project conditions.
- B. Select firestopping from those listed herein. Not all are necessarily required.

2.02 FIRESTOPPING

- A. Acceptable Manufacturers:
 - 1. Bio Fireshield, Division of RectorSeal Corp.
 - 2. Hilti Construction Chemicals. Inc.
 - 3. W. R. Grace & Co.

4. 3M Fire Protection Products.
 5. Specified Technologies, Inc.
 6. Tremco, Inc.
 7. United States Gypsum Co.
 8. Others, as specified herein.
- B. Building Exterior Perimeter Fire and Smoke Containment Materials:
1. Forming Material: Thermafiber LIC Thermafiber Safing Insulation (Type SAF) UL-labeled semi-rigid mineral fiber with a nominal density of 4-pounds per cubic foot and scrim-reinforced vapor retarder foil facing.
 2. Mounting Angles: Steel angles, not less than 1/8-inch thick, sizes as indicated.
 3. Fill Material: STI "SpecSeal AS200 Elastomeric Spray" or "SpecSeal Fast Tack Spray".
- C. Intumescent Sealants and Caulks:
1. Bio Fireshield "Biostop 500+ Intumescent Firestop Sealant".
 2. RectorSeal "Metacaulk 1000 Firestopping Sealant" and "Metacaulk 950 Firestopping Sealant".
 3. 3M "Fire Barrier CP 25WB+ Caulk".
 4. Hilti TS-One High Performance Sealant'.
 5. W. R. Grace & Co. "FlameSafe FS 1900 Series Sealant".
 6. Specified Technologies, Inc. "SpecSeal Series SSS Intumescent Sealant".
 7. Tremco "TREMstop IA" intumescent one-part acrylic.
 8. United States Gypsum Co. "Firecode IA Intumescent Acrylic Firestop Sealant'.
- D. Non-Intumescent or Endothermic Sealants and Caulks:
1. Bio Fireshield "Biotherm 100/200SL Firestop Sealants' one-part silicone.
 2. RectorSeal "Metacaulk 836+ Silicone Firestopping Sealant".
 3. W. R. Grace & Co. "FlameSafe FS 900+ Sealant".
 4. Specified Technologies, inc. "Pensil 300 Firestop Sealant" one-part silicone sealant.
 5. Hilti "CP 601S Elastomeric Sealant".

6. Tremco "FYRE-Shield" one-part ceramic-based sealant.
7. Tremco "TREMstop Acrylic" one-part acrylic sealant.
8. Tremco "FYRE-Sir one-part silicone sealant.
9. United States Gypsum Co. "Firecode Acrylic Firestop: Sealant Regular".

F. Firestop Spray Coatings:

1. W. R. Grace & Co. "FlameSafe FS 3000 Firestop Coating".
2. 3M "FireDam Spray".
3. United States Gypsum Co. "Firecode Acrylic Firestop Sealant Type SA".

G. Firestop Putty:

1. 3M "Fire Barrier Moldable Putty +°, in stix or pads.
2. Tremco "TREMstop FP* intumescent flowable putty.
3. Hilti "CP 617 Firestop Putty Pad" and "CP 618 Firestop Putty Stick".
4. W. R. Grace & Co. "FlameSafe FSP 1000 Putty" and "FlameSafe FSP 1077 — Putty Pads".

H. Firestop Sleeves:

1. Tremco "TREMstop FyreCarr firestop system.
2. Hilti "CP680 Cast-in Firestop Device".
1. W. R. Grace & Co. "FlameSafe Intumescent Sleeve (Fsis)".

I. Firestop Pillows 1 Blocks:

1. Bio Firestop "Bio Firestop Pillows".
2. Tremco "TREMstop PS" fire containment pillow system.
3. Hilti "FS-657 Fire Block".
4. W. R. Grace & Co. "FlameSafe Bags ° and "FlameSafe Pillows".

J. Firestop Foam: Two-component silicone elastomer; 3M "Fire Barrier 2001 Silicone RN Foam" or Specified Technologies, inc. "Pensil 200 Firestop Foam".

K. Firestop Collars:

1. Hilti "CP 642 Firestop Collar" and "CP 643 Firestop Collar".

2. W. R. Grace & Co. "FlameSafe Intumescent Wrap Strip*."

L. Accessories:

1. Forming/Damming Materials: Mineral fiberboard or other type recommended by manufacturer.
2. Primer, Sealant, and Solvent Cleaner: As recommended by foam.

PART 3- EXECUTION

3.01 INSPECTION

- A. Inspect openings and voids to be sealed to determine if conditions are satisfactory for the proper installation of firestopping.
- B. If unsatisfactory conditions exist, do not commence Work until such conditions have been corrected.

3.02 CONDITIONS REQUIRING FIRESTOPPING

A. General:

1. Provide firestopping for conditions where conduits penetrate fire walls in Building 200 specified whether or not firestopping is indicated, and, if indicated, whether such material is designated as insulation, safing, or otherwise.
2. Insulation types specified in other SECTIONS shall not be installed in lieu of firestopping materials specified herein.

B. Building Exterior Perimeters:

1. Where exterior facing construction is continuous past a structural floor, and a space would otherwise remain open between the inner face of the wall construction and the outer perimeter edge of the structural floor, provide firestopping to equal the fire resistance of the floor assembly. Mineral wool by itself is not an acceptable firestop, neither is mineral wool used with beads of caulking applied along the length of mineral wool/curtain wall or mineral wool/floor slab junctures, if mineral wool is part of the firestop system, the mineral wool must be completely covered by appropriate thickness of UL-Listed firestop sealant or coating.
2. Where an exterior wall of composite type construction passes a perimeter structural member, such as a girder, beam, or strut, and the finish on the interior wall face does not continue up to close with the underside of the structural floor above, thus interrupting the fire-resistive integrity of the wall system, and a space would otherwise remain open between the interior face of the wall and lower edge of the structural member, provide firestopping to continuously fill such open space.

C. Interior Walls and Partitions:

1. Where a wall or partition is continuous past a structural floor, such as at stairwells and vertical shafts, and a space would otherwise remain open between the wall face and perimeter edge of the adjoining structural floor, provide elastomeric firestopping.
2. Provide firestopping whether or not there are any clips, angles, plates, or other members bridging or interconnecting the wall and floor systems, and whether or not such items are continuous.

D. Penetrations:

1. Penetrations include conduit, cable, wire, pipe, duct, or other elements that pass through one or both outer surfaces of a floor, roof, wall, or partition.
2. Except for floors on grade, where a penetration occurs through a structural floor or roof and a space would otherwise remain open between the surfaces of the penetration and the edge of the adjoining structural floor or roof, provide firestopping to fill such spaces in accordance with ASTM E814.
3. Where penetrations occur at fire-rated walls or partitions of solid-type construction, provide firestopping to completely fill spaces around the penetration, in accordance with ASTM E81
4. Where penetrations occur at fire-rated walls or partitions of hollow-type construction, provide firestopping, in accordance with ASTM E814, to completely fill spaces around the penetration on each side of the wall or partition.
5. These requirements for penetrations shall apply whether or not sleeves have been provided, and whether or not penetrations are to be equipped with escutcheons or other trim.

- E. Provide firestopping to fill miscellaneous voids and openings in fire-rated construction in a manner essentially the same as specified hereinbefore.

3.03 PREPARATION

- A. Where firestopping is installed at locations which will remain exposed in the completed Work, provide protection as necessary to prevent damage to adjacent surfaces and finishes, and protect as necessary against damage from other construction activities.

3.04 INSTALLATION

- A. Prepare and install firestopping in compliance with the manufacturer's printed instructions applicable to Project conditions.

B. Foam Firestopping:

1. Provide form materials as necessary to retain foam when placed.

2. Prime contact surfaces when required by foam manufacturer.
 3. Inject foam into void spaces with sufficient care and attention to assure that foam develops full and complete contact with adjoining surfaces, and that the space is filled free from air pockets
 4. Cure foam 24 hours, remove foam materials not required to remain, and inspect foam in place.
 5. Provide additional foam or sealant as necessary to fill insufficient depth of foam and remaining voids.
- C. Finish surfaces of firestopping that is to remain exposed in the completed Work to a uniform and level condition.
- D. Fire-Rated Joint System for Heads of Non-Load-Bearing Stud Partitions:
1. General: Install system components in accordance with the manufacturer's printed instructions, UL Listing requirements, as indicated, and as specified.
 2. Gypsum Board: Install and finish gypsum board as specified in SECTION 09 29 00 GYPSUM BOARD".
 3. Flute Cover Plates: Install flute cover plates and fasten through flange to metal deck.

3.05 CLEANING

- A. Remove spilled and excess materials adjacent to firestopping without damage to adjacent surfaces.
- B. Leave finished Work in neat, clean condition with no evidence of spillovers or damage to adjacent surfaces.

3.06 PROTECTION

- A. Protect firestopping from damage and deterioration until time of completion and acceptance by SCCD.

SECTION 08 31 13

ACCESS DOORS AND FRAMES

PART 1-GENERAL

1.01 DESCRIPTION

- A. This SECTION describes the requirements for furnishing and installing access doors and frames for walls and ceilings **in conjunction with the work of all trades.**

1.02 QUALITY ASSURANCE

- A. Source Limitations: Obtain access doors and frames through one source from a single manufacturer.
- B. Regulatory Requirements:
1. Materials and installation shall be in compliance with applicable building code and other regulations. Refer to SECTION 01 41 00 "REGULATORY REQUIREMENTS" for further information.
 2. Fire-rated access doors and frames shall be in compliance with NFPA 80 and shall be identical to access door assemblies tested for fire-test-response characteristics in accordance with tests in accordance with the applicable building code and shall be labeled and listed by UL, ITS-WH, or another testing and inspecting agency acceptable to authorities having jurisdiction:

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's printed descriptive and technical data and illustrations, clearly marked to indicate specific product types, materials, components, and finishes. Include manufacturer's printed installation instructions.
- B. Schedule: Submit complete access door schedule showing door types, general locations, sizes, construction details, and other data pertinent to installation.
- C. Maintenance Data and Keys: Furnish manufacturer's printed maintenance data and keys to the Owner.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store access doors and frames in manufacturer's standard protective packaging. Do not remove protective packaging until ready for installation.
- B. Store access doors and frames in a clean, dry, and protected location away from construction activities.
- C. Comply with additional requirements of the manufacturer.

1.05 COORDINATION

- A. Coordinate locations and installation of access doors with ceiling and wall framing and Work requiring access.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with the requirements, furnish access doors and frames as manufactured by Milcor, as specified, or accepted equal by Acudor Products Inc., J.L. Industries Inc., Karp Associates Inc., Larsen's Manufacturing Co., or Nystrom Building Products Co.

2.02 NON-FIRE-RATED ACCESS DOORS AND FRAMES

- A. General: Furnish each access door assembly manufactured as an integral unit, complete with all parts, and ready for installation. Fabricate units of continuous welded construction. Fill and grind joints smooth to ensure flush and square unit.
- B. Materials and Fabrication:
 - 1. Frames: Manufacturer's standard hot- or cold-rolled steel, except stainless steel at access doors in tile walls and other wet locations indicated, not less than 16 gauge (0.0625-inch) thick. Prepare frames in factory for attachment devices.
 - 2. Door Panels: Manufacturer's standard hot- or cold-rolled steel, except stainless steel for access doors in tile walls and other wet locations indicated, not less than 14-gauge (0.079-inch) thick.
 - 3. Drywall Bead: Manufacturer's standard galvanized steel, formed to receive joint compound and sized to suit thickness of gypsum board.
 - 4. Hardware:
 - a. Hinge: Concealed, continuous, spring type; opening to 175 degrees.
 - b. Locks Flush, key-operated type, with metal cams. Furnish number of locks as necessary to hold door in flush, smooth plane when closed. Furnish 2 keys for each keyed lock. Key all locks alike, unless otherwise directed.
 - 5. Steel Finish: Phosphate-treated and finished with fast-curing, lead- and chromate-free, factory-applied baked alkyd enamel prime coat suitable to receive finish paint Finish paint is specified in SECTION 09 91 00 "PAINTING".
 - 6. Stainless Steel Finish: Manufacturer's standard satin finish.
- C. Wall Access Doors and Frames:

1. Size: Nominal 12-inches square. Obtain Architect's written acceptance of manufacturer's standard-size units, which may vary slightly from sizes specified.
 2. Concealed Flange, Flush Panel Type for Installation in Gypsum Board: Milcor 'Style DW, or accepted equal.
 3. Exposed Flange, Flush Panel Type for Installation in Tile: Mitcor"Style M", or accepted equal.
- D. Ceiling Access Doors and Frames, Downward Opening:
1. Sizes: Nominal 12-inches square for access to valves; 24-inches square for access to ducts. Reinforce 24-inch square size doors for installation in ceiling suspension system. Obtain Architect's written acceptance of manufacturer's standard-size units, which may vary slightly from sizes specified.
 2. Concealed Flange, Flush Panel Type for Installation in Gypsum Board: Milcor "Style DW", or accepted equal.

2.03 FIRE-RATED ACCESS DOORS AND FRAMES

- A. General: Furnish each access door assembly manufactured as an integral unit, complete with all parts, and ready for installation. Fabricate units of continuous welded construction. Fill and grind joints smooth to ensure flush and square unit.
- B. Materials:
1. Frames: Manufacturer's standard hot- or cold-rolled steel, [except stainless steel for access doors in tile walls and other wet locations indicated, 1 not less than 16- gauge (0.0625-inch) thick. Prepare frames in factory for attachment devices.
 2. Door Panels: Manufacturer's standard flush, steel panel construction, {except stainless steel for access doors in tile walls and other wet locations indicated, 1 not less than 20-gauge (0.0375-inch) thick, with a core of mineral-fiber insulation.
 3. Hardware:
 - a. Hinge: Concealed, continuous pin type: opening to 175 degrees.
 - b. Closer: Spring type, self-closing.
 - c. Latch/Lock Mechanism: Self-latching assembly with flush, key-operated lock and interior latch release. Furnish number of latch/lock mechanism as necessary to hold door in flush, smooth plane when closed. Furnish 2 keys per lock. Key all locks alike, unless otherwise directed.
 4. Steel Finish: Phosphate-treated and finished with fast-curing, lead- and chromate-free, factory-applied baked alkyd enamel prime coat suitable to receive finish paint. Paint is specified in SECTION 09 91 00 "PAINTING".

5. Stainless Steel Finish: Manufacturer's standard satin finish.
- C. Universal, Exposed Flange, Flush Panel Type for Installation in Fire-Rated Gypsum Board, Masonry, and Ceramic Tile Walls: Milcor. OFR" as follows, or accepted equal.
1. Fire Rating: UL Class B, 1-1/2 hours.
 2. Temperature Rise Rating: Not more than 250 degrees Fahrenheit after 30 minutes exposure, UL certified.
 3. Sizes:
 - a. General: Obtain Architect's written acceptance of manufacturer's standard-size units, which may vary slightly from sizes specified.
 - b. Walls: Nominal 12-inches square.
 - c. Ceilings: Nominal 12-inches square for access to valves; 24-inches square for access to ducts.

2.04 ACCESSORIES

- A. Attachment Devices: Concealed, corrosion-resistant fasteners, anchors, hardware as recommended by the door manufacture to suit job conditions, as required for complete installation.

PART 3- EXECUTION

3.01 INSPECTION

- A. Verify that conditions are satisfactory for the installation for access doors and frames.
- B. If unsatisfactory conditions exist, do not begin installation until such conditions have been corrected.

3.02 INSTALLATION

- A. Install access doors and frames in compliance with the manufacturer's printed instructions and as specified. Install fire-rated access doors and frames in compliance with NFPA 80 and their listing requirements.
- B. Provide access doors and frames where required to provide access to valves, ductwork, and other Work requiring access in DIVISION 22 PLUMBING, DIVISION 23 HEATING, VENTILATING, AND AIR CONDITIONING, and DIVISION 26 ELECTRICAL.
- C. Position each unit to provide convenient access to concealed Work requiring access.
- D. After installation, adjust doors and frames and hardware for proper operation.

3.03 REPAIRS

- A. Touch up minor defects in factory prime finish with compatible field-applied primer as recommended by the access door manufacturer. Upon completion, repair Work shall not be apparent
- B. Remove access doors and frames that are bent, warped, bowed, dented, and otherwise damaged and doors and frames that cannot be successfully refinished and provide new acceptable Work at no additional cost to the Owner.

3.04 COMPLETION

- A. When complete. access doors and frames shall be set plumb and level, accurately aligned with adjacent Work, and securely attached to supporting construction.
- B. Exposed surfaces shall be clean and free from scratches, dents, tool marks, stains, discoloration, and other defects and damage. Leave access doors and frames ready to receive finish paint

3.05 PROTECTION

- A. Protect access doors and frames from damage and deterioration until time of completion and acceptance by the Owner.

END OF SECTION

SECTION 08 71 00

DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes Door hardware for wood doors, steel doors, aluminum framed entrance doors, and miscellaneous hardware items.
- B. Provide hardware not described herein but otherwise required for proper completion of the project, conforming to size, function, quality, and finish of other specified hardware.

1.02 REFERENCED STANDARDS

- A. Builders Hardware Manufacturers Association (BHMA):
 - 1. BHMAA 156.1 "Butts and Hinges".
 - 2. BHMAA 156.3 "Exit Devices".
 - 3. BHMAA 156.4 "Door Controls – Closers".
 - 4. BHMAA 156.5 "Auxiliary locks and Associated Products".
 - 5. BHMAA 156.6 "Architectural Door Trim".
 - 6. BHMA A 156.7 "Template Hinge Dimensions".
 - 7. BHMA A 156.8 "Door Controls - Overhead Stops and Holders".
 - 8. BHMA A 156.13 "Mortise locks and latches".
 - 9. BHMAA156.16 "Auxiliary Hardware".
 - 10. BHMAA156.18 "Materials & Finishes".
 - 11. BHMA A156.19 "Power Assist & low Energy Power Operated Doors".
 - 12. BHMA A 156.21 "Thresholds".
 - 13. BHMA A 156.22 "Door Gasketing Systems".
 - 14. BHMA A 156.25 "Electrified Locking Devices".
 - 15. BHMAA156.26 "Continuous Hinges".
 - 16. BHMAA156.28 "Master Keying Systems".
 - 17. BHMA A156.31 "Electrified Strikes and Frame Mounted Activators".

- B. California Building Code (CBC):
 - 1. California Code of Regulations, Title 24.
- C. Door and Hardware Institute (DHI):
 - 1. DHI A 115 "Steel Door Preparation Standards".
 - 2. DHI A 115W "Wood Door Preparation Standards".
 - 3. DHI A 115.JG "Installation Guide for Doors and Hardware".
 - 4. DHI "Keying Systems and Nomenclature".
 - 5. DHI "Sequence and Format for the Hardware Schedule".
- D. National Fire Protection Association (NFPA):
 - 1. NFPA 80 "Fire Doors and Fire Windows".
- E. Underwriters laboratories Inc. (UL):
 - 1. UL10C "Positive Pressure Fire Tests Of Door Assemblies".
 - 2. UL 305 "Panic Hardware".
 - 3. UL1034 "Burglary-Resistant Electric locking Mechanisms".
- F. Uniform Building Code (UBC):
 - 1. UBC 7-2 "Fire Tests Of Door Assemblies".
 - 2. UBC 10-4 "Panic Hardware".

1.03 SUBMITTALS

- A. Products other than those designated herein must be approved as substitutions prior to submittal of Door Hardware.
- B. Submit for Approval: Door Hardware Schedule in vertical format conforming to DHI "Sequence and Format for the Hardware Schedule: Horizontal format schedules will be rejected without review. Format shall be single-sided, 8-1/2 by 11 inch page size. Organize Schedule into headings, grouping doors to receive same hardware items, indicating quantity and complete designations of every item required for each door opening. The schedule shall include:
 - 1. Cover sheet indicating name and location of Project; name of Architect; name of Contractor; name, address and phone of hardware supplier, name of hardware consultant preparing the schedule; date of submittal or revised submittal.
 - 2. List of abbreviations used in schedule.

3. An index of door openings, listed in numerical order, with hardware heading identification cross-referenced to Architect's set identification.
 4. Hardware headings shall be listed in numerical order corresponding, as closely as possible, with numerical order of Architect's set numbers.
 5. Each hardware heading shall have each door listed in numerical order according to door numbers in the Architect's door schedule, and denoting: location, configuration (single, pair, etc.), type (elevation, etc.), door and frame size(s), door and frame material(s), handing, fire rating, and key set identification.
 6. Type, complete model number, style, function, size, hand, and finish of each door hardware item.
 7. Manufacturer of each item.
 8. Fastenings and other pertinent information.
- C. Submit for Information: Manufacturer's technical product data / catalog cut sheets, clearly marked for each hardware item, including installation details, material descriptions, dimensions of individual components and profiles, and finishes. Format shall be single-sided, 8-1/2 inch x 11-inch page size.
- D. Submit for Information: Keying Schedule detailing Owner's final keying instructions for locks. Format shall conform to DHI "Keying Systems and Nomenclature." Format shall be single-sided, 8-1/2 x 11-inch page size.
- E. Operation and Maintenance Data: Provide complete operating and maintenance instructions listing routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guides.
- F. Qualification Data: For firms and persons specified in "Quality Assurance" Article.
- G. Warranties: Special warranties specified in this Section.

1.04 QUALITY ASSURANCE

- A. Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.
- B. Manufacturers, Hardware Supplier, and Installer shall have no less than five years experience in the provision of Door Hardware for projects similar in size, complexity and type to this Project.
- C. Hardware Schedule and Keying Schedule submittals shall be prepared and signed by a Hardware Consultant holding the credentials of Architectural Hardware Consultant (AHC) issued by the Door and Hardware Institute. Hardware Consultant shall have no less than five years experience in the scheduling of Door Hardware for projects similar in size, complexity and type to this Project; and shall be available, at no additional cost, during the course of the

Work to consult with Contractor, Architect, and Owner regarding door hardware and keying.

1.05 REGULATORY REQUIREMENTS

- A. All hardware shall meet the requirements of CBC Sections 1133B.2.1, 1133B.2.5.1, and 1003.3.1.8.
- B. Panic Exit Devices and Fire Exit Devices shall comply with UBC Standard 10-4, CBC Section 1003.3.1.9.
- C. Thresholds shall comply with CBC Section 1133B.2.4.1.
- D. Fire-Rated Door Assemblies: Not Used.
- E. Comply with all applicable accessibility guidelines as set forth in Americans with Disabilities Act (ADA) - Accessibility Guidelines for Buildings and Facilities (ADMG); and California Building Code (CBC) Chapters 11A, 11B and 11C.
- F. Latching and locking doors that are hand-activated and that are in a path of travel shall be operable with a single effort by lever-type hardware, panic bars, push-pull activating bars, or other hardware designed to provide passage without requiring the ability to grasp the opening hardware.
 - 1. All hand-activated hardware shall be mounted between 30 inches and 44 inches above finished floor, except Panic Exit Devices and Fire Exit Devices shall be mounted between 36 inches and 44 inches above finished floor.
- G. Latches, locks, and exit devices shall require no more than 15 lbs to release latch; from egress side shall not require the use of a key, tool, or special knowledge for operation.
- H. At sliding doors, when fully open, operating hardware shall be exposed and usable from both sides.
- I. Door Opening Force: Comply with the following maximum opening-force requirements:
 - 1. Interior Hinged Doors: 5 lbs applied perpendicular to door at latch.
 - 2. Exterior Hinged Doors: 5 lbs applied perpendicular to door at latch.
 - 3. Sliding or Folding Doors: 5 lbs applied parallel to door at latch.
 - 4. Fire Rated Doors: Not Used
- J. Where door closers are provided, adjust Sweep speed so that from an open position of 70 degrees the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.

- K. Thresholds shall be maximum 1/2 inch in height above floor and landing on both sides of openings. Bevel raised thresholds with a slope of not more than 1:2.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Each article of hardware shall be delivered individually packaged in the manufacturer's standard commercial carton or container, and shall be properly marked or labeled to be readily identifiable with the approved hardware schedule.
- B. Manufacturer's printed installation instructions, fasteners, and special tools shall be included in each package.
- C. Hardware shall be stored in a dry, secure locked area, complete with shelving for unpacking and sorting of the door hardware.
- D. Deliver all master keys by restricted, receipted delivery directly from the manufacturer to the Owner.

1.07 COORDINATION

- A. Provide hardware templates to the parties involved for doors, frames, and other work specified to be factory prepared for door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- B. When required by door or frame fabricator, furnish physical samples of each mortised and recessed hardware item required.
- C. Furnish as required any hardware items or accessories requiring factory or shop installation.
- D. Coordinate layout and installation of recessed pivots and closers with floor construction.
- E. Electrical System Rough-in: Coordinate layout and installation of electrified door hardware with connections to power supplies, fire alarm system and detection devices, access control system, and security system as applicable.
- F. Keying Conference: Conduct conference at Project site with Owner or designated representative. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to the following:
 - 1. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
 - 2. Preliminary key system schematic diagram.
 - 3. Requirements for key control system.

1.08 WARRANTY

- A. In addition to, and not precluding, other warranty requirements in the Contract Documents, the following hardware items shall carry extended minimum warranties as indicated:
1. Hinges: Ten years from date of Substantial Completion.
 2. Locks: Five years from date of Substantial Completion.
 3. Exit Devices: Three years from date of Substantial Completion.
 4. Door Closers: Ten years from date of Substantial Completion.

1.09 MAINTENANCE

- A. Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.
- B. At substantial completion, Contractor shall provide an on-hand inventory of spare/replacement parts, identical to the hardware items in the approved hardware schedule, and furnished in the quantities as follows:
1. Complete lock latch of each type and function, 1 each.
 2. Complete surface closers, 2 each.
 3. Door stops of each type, 2 each.
 4. Exit device of each type, 1 each.
 5. Door Seal (gasket /weatherstrip) of each type, 1 set.
 6. Door bottom /sweep of each type, 2 each.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements herein, provide products by one of the following manufacturers for each type of hardware:
1. Butt Hinges: Bommer Industries (BOM). Hager Companies (HAG), Stanley (STA).
 2. Continuous Geared Hinges: Hager Companies (HAG), Pemko (PEM), Stanley (STA).
 3. Cylinders and Keying: Best Access Systems (BAS) to match facility standard - no substitutions.

4. Locks and Latches: Best Access Systems (BAS) to match facility standard - no substitutions.
5. Self-Contained Electronic Locks: Best Access Systems (BAS) or **Stanley Wireless Access Control** to match facility standard - no substitutions.
6. Exit Devices: Precision (PHI), Sargent Manufacturing Co. (SAR), Von Duprin (VON).
7. Electric Strikes: Folger Adams (FOL), Hanchett Entry Systems (HES). Security Door Controls (SDC), Von Duprin (VON).
8. Door Position Switches: DynaLock (DYN), Security Door Controls (SDC), Control (SEN).
9. Flush Bolts and Door Coordinators: Door Controls Interactional (DCI), Ives (IVE), Rockwood (ROC), Trimco (TRI).
10. Surface Door Closers: LCN (LCN) 4000 Series, Norton (NOR) 7500 Series, Stanley (STA) 04550 Series.
11. Overhead-Concealed Door Closers: LCN (LCN) 2030 Series.
12. Overhead Holders and Stops: Architectural Builders Hardware (ABH), Glynn- Johnson (GLY), Rison (RIX), Rockwood (ROC).
13. Low Energy Door Operators and Accessories: Horton (HOR), Sedco (SED). Stanley (STA).
14. Architectural Door Trim: Anemostat (ANE), Burns (BUR), Ives (IVE). Rockwood (ROC), Trimco (TRI).
15. Auxiliary Hardware: Burns (BUR), Ives (IVE), Rockwood (ROC), Trimco (TRI).
16. Door Bottoms. Metal Thresholds, Weatherstripping and Gaskets: National Guard Products (NGP), Pemko (PEM), Reese Enterprises (RSE).

2.02 MATERIALS AND FABRICATION

- A. Products named or identified by make or model number, or other designation and described herein are base products. Base products establish the standards of type, in-service performance, physical properties, appearance, warranty, cost, and other characteristics required by the Project.

2.03 FASTENERS

- A. Provide concealed fasteners or hardware items on exterior doors, which are exposed when door is closed.
- B. Combination machine screws and expansion shields shall be used for attaching hardware to concrete or masonry.

- C. Fasteners exposed to the weather in the finished work shall be of brass, bronze, or stainless steel.

2.04 BUTT HINGES

- A. Butt hinges shall meet BHMA A156.1 requirements.
- B. Hinge dimensions shall conform to BHMA A156.7.
- C. Base Metal shall be steel plated (fire-rated doors not used); bronze or stainless steel for exterior outswinging doors; bronze or plated steel elsewhere as scheduled.
- D. Provide hinges with antifriction bearings for doors with closers.
- E. Unless otherwise indicated, size hinges as follows:
 - 1. 1-3/8 inch thick doors to 36 inches width: 3-1/2 inch height, standard weight.
 - 2. 1-3/4 inch thick doors to 36 inches width: 4-1/2 inch height, standard weight.
 - 3. 1-3/4 inch thick doors over 36 inches width: 5 inch height, heavy weight.
- F. Provide in minimum width sufficient to clear trim when door swings 180 degrees, whether or not shown on Drawings to swing 180 degrees.
- G. Number of hinges per leaf shall be as follows:
 - 1. Doors to 60 inches in height: 2 hinges.
 - 2. Doors over 60 to 90 inches in height: 3 hinges.
 - 3. Doors over 90 to 120 inches in height: 4 hinges.
 - 4. For doors over 120 inches in height 4 hinges plus 1 hinge for every 30 inches, or fraction thereof, door height greater than 120 inches.
- H. Screws: Flat head wood screws not less than 1-1/2 inches long for hinges for wood doors; flat head machine screws elsewhere.
- I. Hinges for reverse bevel doors with locks shall have pins that are made non-removable when the door is in the closed position by means of a set screw in the hinge pin barrel.

2.05 CONTINUOUS GEARED HINGES

- A. Continuous hinges shall meet BHMA A156.26 requirements.
- B. Type: Heavy-duty assembly of 3 interlocking aluminum extrusions. Door leaf and jamb leaf shall be continuously geared together the full hinge length; secured

together with full-length cover channel permitting 180 degree operation. Vertical door loads carried on integrated thrust bearings spaced no more than 3 inches apart.

- C. Hinges shall have non-removable cap at hinge top to prevent foreign material from becoming lodged in hinge gear mechanism.
- D. Provide factory finished to match door and frame finish.
- E. Hole pattern for fasteners shall be symmetrical and located 10 template dimensions.

2.06 CYLINDERS, KEYING AND KEY STORAGE

- A. Lock cylinders shall meet BHMA A156.5 requirements.
- B. Masterkeying system shall meet BHMA A156.28 requirements.
- C. All cylinders shall be interchangeable core type.
- D. Locks shall be keyed according to approved Keying Schedule.
- E. Locks shall be furnished with a temporary keying system for interim use during construction.
- F. Provide change keys in individual envelopes for each cylinder delivered. Envelopes shall be marked with respective door identification numbers.
- G. Key set symbol, and inscription "Do Not Duplicate" shall be stamped on all keys.
- H. Keys shall be supplied as follows:
 - 1. Locks: 3 change keys each lock.
 - 2. Master keyed sets: 2 keys each set.
 - 3. Grand master keys: 5 total.
 - 4. Great Grand master keys: 5 total,
 - 5. Interchangeable Core control keys: 2 total.
 - 6. Construction keys: 10 total.
 - 7. Blank keys: 100 total.
- I. Subject to compliance with requirements, provide emergency entrance key vault(s); Knox Company 3200 Series, or equal.
 - 1. Recessed mount with hinged door, with tamper switch; 1/4 inch plate steel housing; 1/2 inch thick steel door with gasket seal.

2. Exterior Dimensions: 7 inches (H) x 7 inches (W) x 3-1/4 inches (D).
3. Finish Color - Black, Dark Bronze or Aluminum as selected by Architect.
4. Provide recessed mounting kit and all other required mounting accessories.
5. Where indicated provide security key override switches for electrically activated openings.
6. Coordinate and provide keying and type per fire / police department, and other jurisdictional agency requirements.

2.07 LOCKSETS AND LATCHSETS

- A. Mortise Locks and Latches shall meet BHMA A156.13 Grade 1 requirements.
- B. Auxiliary locks shall meet BHMA A156.5 requirements.
- C. Electrified locks shall also meet BHMA A156.25 requirements.
- D. Provide locking or latching functions as indicated in Hardware Sets.
- E. Operating trim shall be lever type as indicated in Hardware Sets.
- F. Lock trim shall be rose or escutcheon type as indicated in Hardware Sets; heavy wrought or cast brass, bronze, or stainless steel; through-bolted through door.
- G. Lock functions, which include thumb turn trim, shall be provided with thumb turns compliant with accessibility code requirements.
- H. Lock Throw: Comply with requirements for length of latch bolts to comply with labeled fire door requirements.
- I. Lock backset shall be 2-3/4 inches unless otherwise indicated.
- J. Provide curve-lip strike with dust box for each latch or lock bolt, with lip extended to protect frame, finished to match door hardware set, unless otherwise indicated.

2.08 SELF-CONTAINED ELECTRONIC LOCKS

- A. Self-Contained Electronic Locks shall meet BHMA A 156.25 requirements
- B. Self-Contained Electronic locks: Internal, battery-powered, self-contained electronic key override cylinder shall be compatible with and master keyed to Project requirements as indicated herein.
- C. Provide curved-lip strike with dust box for each latch or lock bolt, with lip extended to protect frame, finished to match door hardware set, unless otherwise indicated.

2.09 EXIT DEVICES

- A. Exit devices and exit device accessories shall meet BHMA A156.3. Grade 1 requirements.
- B. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.
- C. Fire Exit Devices: Complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305.
- D. Outside Trim: Design, material and finish to match locksets, unless otherwise indicated.
- E. Adjustable strikes shall be provided for rim type and vertical rod devices.
- F. Fire Exit Removable Mullions: Where indicated, provide removable mullions for use with fire exit devices complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL305. Mullions shall be used only with exit devices for which they have been tested.

2.10 ELECTRIC STRIKES

- A. Electric strikes shall meet BHMA A156.31 Grade 1 requirements, and be listed and labeled under UL 1034 Burglary Resistant Electric Locking Equipment.
- B. Electric strikes for fire rated openings shall be listed and labeled for such use by a testing agency acceptable to authorities having jurisdiction. Fail Secure (fail latched) strikes shall be used at all fire rated openings.

2.11 DOOR POSITION SWITCHES

- A. Door position switches used on fire rated doors shall be listed and labeled by a testing agency acceptable to authorities having jurisdiction.

2.12 FLUSH BOLTS

- A. Automatic flush bolts shall meet BHMA A156.3
- B. Provide dust proof strikes for bottom bolts. Dust proof strikes shall meet BHMA A156.16.

2.13 DOOR COORDINATORS

- A. Door coordinators shall meet BHMA A156.3 requirements.
- B. Door coordinators shall be flat bar type: stop mounted with all necessary filler bars and mounting brackets to accommodate required hardware.

2.14 SURFACE DOOR CLOSERS

- A. Door closing devices shall meet BHMA A156.4, Grade 1 requirements.
- B. Surface closers shall be fully adjustable with sweep speed, latch speed, and back check position valves.
- C. Surface closers on exterior doors without building overhang protection shall be primed with rust inhibitive primer before finish application.
- D. Arm selection shall follow the requirements of the manufacturer's recommendations with brackets, drop plates and miscellaneous accessories provided as necessary.
- E. Provide closers with arms designed to permit openings of doors as far as job conditions will permit; unless otherwise indicated closers with arms restricting opening of door will not be acceptable.

2.15 OVERHEAD CONCEALED DOOR CLOSERS

- A. Overhead Concealed Door Closers shall meet BHMA A156.4, Grade 1 requirements.
- B. Closers shall be fully adjustable with sweep speed; latch speed and back check position valves.

2.16 OVERHEAD HOLDERS AND STOPS

- A. Overhead holders and stops shall meet BHMA A156.8 requirements.
- B. Overhead door holders and stops shall be adjustable from 90 to 110 degrees dead stop or hold open position, as applicable.
- C. Overhead doorstops shall have shock absorbers providing 5 to 7 degrees compression before dead stop.
- D. Overhead stops shall not be provided with hold open function when used at fire rated doors.

2.17 LOW ENERGY DOOR OPERATORS

- A. Overhead Concealed Operator: The operator header shall be mounted directly over the door and serve as the doorframe header. The operator output shaft shall connect to an arm that transmits power to the door via a slide block, which moves in track that is mounted at the top of the door.
- B. Low Energy Door Operators shall meet BHMA A156.19 requirements.
 - 1. Door shall not open to back check faster than 3 seconds, and shall require no more than 15 lbs applied 1 inch from latch edge to stop door movement.

2. Door shall remain in fully open position for no less than 5 seconds.
3. Door shall close from 90 degrees to 10 degrees no faster than 3 seconds, and 10 degrees to fully close no faster than 1-1/2 seconds.
4. Power operation shall be activated by push plate switch(s), mounted 40 inches from finished floor to center of switch.

2.18 ARCHITECTURAL DOOR TRIM

- A. Architectural door trim shall meet BHMA A156.6 requirements.
- B. Door Protection Plates: Kick, mop, and armor plates shall be 0.050-inch thick brass, bronze, or stainless steel depending on finish indicated. Plates shall have beveled edges and shall be provided with countersunk mounting holes and NO.6 oval head screw fasteners. Width of kick and armor plates shall be 2 inches less than door width for single doors and 1 inch less for pairs of doors. Width of mop plates shall be 1 inch less than door width. Unless otherwise indicated, height shall be 10 inches for kick and mop plates, and 34 inches for armor plates.
- C. Door Edging and Astragals: Fabricated from 18 gauge cold-rolled steel or 304 stainless steel as indicated; factory prepared for all mortise hardware; countersunk screw mounting.
- D. Push and pull plates shall be 0.050-inch thick brass, bronze, or stainless steel depending on finish indicated. Plates shall have beveled edges, and shall be furnished with countersunk mounting holes and No.6 oval head screw fasteners. Pull plates shall also be furnished with flat-head through bolts for pull grip.
- E. Push and pull bars and grip handles shall be brass, bronze, or stainless steel depending on finish indicated.

2.19 AUXILIARY HARDWARE

- A. Auxiliary hardware shall meet BHMA A156.16 requirements.
- B. Door Stops: Stops shall be of heavy-duty construction, provided in finish indicated. Floor stops shall be of height required by floor conditions. Unless otherwise indicated, provide stops at all doors as follows:
 1. At exterior, out-swinging doors provide heavy-duty floor stop Trimco 1214 x 1268K or equal, unless stop function is indicated in door closer. At all other doors provide floor stop Trimco 1211, or equal. Where it is not possible to properly place a floor stop, provide heavy duty concealed overhead type stop, or when door closer is indicated, provide heavy-duty dead stop function in closer.
- C. Silencers: Gray rubber, non-marring configured for metal or wood frames as scheduled. Provide 3 per single door and 2 per pair of doors. Silencers shall be tamper resistant once installed in doorframe.

2.20 DOOR BOTTOMS

- A. Door bottoms shall be of aluminum or extruded bronze of the type and finish indicated and shall provide proper clearance and an effective seal with specified thresholds.
- B. Door bottom shall have a rubber, vinyl or neoprene seal as indicated.
- C. The door bottom shall exclude light when the door is in the closed position and shall inhibit the flow of air through the unit.

2.21 METAL THRESHOLDS

- A. Thresholds shall meet BHMA A156.21 requirements.
- B. Thresholds shall be heavy-gauge aluminum of the configuration and finish indicated, and shall provide an effective seal with door bottom.
- C. Where required, thresholds shall be prepared to accommodate floor closers, pivots, and projecting bolts of latching hardware.

2.22 METAL HOUSED TYPE WEATHERSTRIP

- A. Metal Housed Type Weatherstrip shall meet BHMA A156.22 requirements.
- B. Metal Housed Type Weatherstrip shall be aluminum or bronze of the type and finish indicated, comprised of metal retainers with vinyl, neoprene, silicone rubber, polyurethane or vinyl brush inserts as indicated.
- C. Seals shall remain functional through all weather and temperature conditions.

2.23 GASKETING

- A. Shall be a compression type product for use with wood or steel doors; labeled for use on fire-rated doors where required.

2.24 FINISHES

- A. Provide hardware in finishes as indicated.
- B. Unless otherwise indicated, finishes shall conform to those identified in BHMAA156.18. Comply with base material and finish requirements indicated by the following:
 - 1. BHMA 600: Primed for painting, steel base metal.
 - 2. BHMA 626: Satin chromium plated over nickel, brass or bronze base metal.
 - 3. BHMA 628: Satin aluminum, clear anodized, aluminum base metal.
 - 4. BHMA 630: Satin stainless steel, stainless-steel base metal.

5. BHMA 652: Satin chromium plated over nickel, steel base metal.
6. BHMA 689: Aluminum painted, any base material.
7. BHMA 719: Mill finish aluminum, uncoated, aluminum base metal.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine doors and frames for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Examine rough-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Installation shall be in accordance with DHI A115 and/or DHI A115-W, and DHI A115.IG.
- B. Hardware for fire doors shall be installed conforming with NFPA 80, and all other applicable building codes and regulations.
- C. Install each door hardware item according to manufacturer's written instructions, utilizing proper fasteners provided by manufacturer.
- D. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in other Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- E. Set units level, plumb, and true to fine and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.

3.03 DOOR CLOSING DEVICES

- A. Surface closers on doors opening to or from halls and corridors shall be mounted on the room side of the door.
- B. Surface closers on exterior doors shall be mounted on the interior side of building utilizing regular arm, parallel arm, or top jamb mounting as required.
- C. Door dosing devices shall be installed in accordance with the templates and printed instructions supplied by the manufacturer of the devices.

- D. Door closing devices with adjustable spring power shall be adjusted for proper door operation, and compliance will all applicable codes and regulations.
- E. The cutting of weatherstripping to accommodate closer installation will not be acceptable.

3.04 PUSH, PULL AND PROTECTIVE PLATES

- A. All plates shall be installed using countersunk oval head screw fasteners, unless otherwise indicated.
- B. Pull plate grip handles shall be through bolted through the door. When push plate is indicated on opposite door side, through bolts shall be countersunk with push plate mounted to conceal through bolts.

3.05 THRESHOLDS

- A. Thresholds shall be secured with a minimum of 3 fasteners per single door width and 6 fasteners per double door width with a maximum spacing of 12 inches. Thresholds over 6 inches ill width shall be secured with a double row of fasteners.
- B. Exterior thresholds shall be installed in a bed of sealant with combination expansion anchors and stainless steel machine screws, except that bronze or anodized bronze thresholds shall be installed with expansion anchors with brass screws.
- C. Minimum screw size shall be No. 10 length dependent on job conditions, with a minimum of 1-inch thread engagement into the floor or anchoring device used.
- D. Provide thresholds at doors where indicated in Hardware Sets. Refer to Door Schedule and Drawing details for type and configuration required. Additionally, provide fire door thresholds where combustible flooring passes under doors with rating greater than 20 minutes.

3.06 HARDWARE LOCATIONS

- A. Unless otherwise indicated install hardware as follows:
 - 1. Bottom Hinge or Pivot: 10 inches from door bottom to bottom of hinge.
 - 2. Top Hinge or Pivot 5 inches from door top to top of hinge.
 - 3. Center Hinge(s) or Pivot(s): Spaced equidistantly between top and bottom hinges/pivots.
 - 4. Lockset / Latchset Exit Device Operating Trim: 38 inches from finished floor to center of lever/ trim.
 - 5. Push/Pull Plate: 42 inches from finished floor to center of pull.
 - 6. Push-Pull Bars: 42 inches from finished floor to center of bar.

7. Exit Device: 38 inches from finished floor to center of push bar.
8. Floor Stop: Adjacent to wall; not to exceed 4 inches from face of wall; located 3 inches from latch edge of door; in any case never more than 50 percent of door width from latch edge of door.

3.07 ADJUSTING

- A. Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended.
- B. Engage a factory-authorized service representative to adjust door-closing devices, compensating for final operation of heating and ventilating equipment, and to comply with referenced accessibility requirements.

3.08 COMPLETION

- A. When complete all hardware shall be properly secured in place and all exposed surfaces shall be clean and free from scratches, paint, and other defects and damages.
- B. Contractor shall demonstrate that all keys properly operate the locks as identified in the approved Keying Schedule.

3.09 DOOR HARDWARE SETS

- A. The following is a general listing of hardware requirements. Provide hardware items required by established standards and practices to meet state and local codes, whether or not specifically indicated in the following sets.
- B. Silencers and gasketing, where listed in Hardware Sets, may be omitted at openings where door frames are provided with integral seals if integral seals satisfy all applicable Codes and Regulations.
- C. Refer to Door Schedule and/ or Drawings for door opening information, hardware set assignment, and related requirements.
- D. Door protection items - mop plates, kick plates, armor plates, and edge guards are not indicated in Hardware Sets. Refer to Door Schedule and/ or Drawings for required locations.
- E. Final selection of hardware groups shall be performed by the Best Hardware subcontractor selected and shall be approved by the Architect as a shop drawing submittal.

GROUP 01

2 Ea.	Continuous Hinge	780-224HD		HAG
1 Ea.	Exit Device	CD98EO	626	VON
1 Ea.	Exit Device	CD98NL-OP	626	VON
1 Ea.	Removable Mullion	5654	628	VON
1 Ea.	Self-Contained Electronic Lock	OMNILOCK WAMS	628	STA
2 Ea.	Cylinder to Suit Device	IE-72 OR IE-74	626	BAS
2 Ea.	OHC Closer	7500BF Series	689	NOR
1 Ea.	OH Stop (Leaf with Closer)	9 Series	689	RIX
2 Ea.	Door Pull	RM3140-16	630	ROC
1 Ea.	Threshold	171A 72" MS & ES10	719	PEM
2 Ea.	Auto Door Operator	4800 Series - Concealed x Track Arm	628	HOR
2 Ea.	RF Receiver	CP/RX		SED
2 Ea.	Push Plate Actuator - RF Type	619-HSS x CP/TX-J	630	SED
2 Ea.	Weatherstrip	290ASSTOP	630	PEM

GROUP 02

1 Pr	Hinges	AB750	652	HAG
1 Ea.	Classroom lock	45H7R15H	626	BAS
1 Ea.	Door Stop	1209		TRI
2 Ea.	Silencer	1229		TRI

GROUP 03

1.5 Pr	Hinges	AB750	652	HAG
1 Ea.	Classroom lock	45H7R15H	626	BAS
1 Ea.	Door Stop	1209		TRI
1 Ea.	Silencer	1229		TRI
1 Ea.	Cylinder to Suit Device	IE-74	626	BAS
1 Ea.	OHC Closer	7500BF Series	689	NOR

GROUP 04

1-1/2 Pr.	Hinges	AB850	630	HAG
1 Ea.	Exit Device	CD98NL	626	VON
1 Ea.	Cylinder to Suit Device	IE-74	626	BAS
1 Ea.	Self-Contained Electronic Lock	OMNILOCK WAMS	628	STA
1 Ea.	Door Stop	1209	626	TRI
1 Ea.	Threshold	171A 36" MS & ES10	719	PEM
1 Ea.	Knox Box	3200		KNOX
1 Ea.	Door Sweep	345ANB	719	PEM
1 Set	Weatherstripping	290ASSTOP	630	PEM

GROUP 05

3 Pr.	Hinges	AB750	652	HAG
1 Ea.	Storeroom lock	45H7D15H	626	BAS
2 Ea.	Flush Bolt x DP Strike	780F1790F x 82	626	DCI
2 Ea.	Door Stop	1209	626	TRI
2 Ea.	Silencer	1229		TRI
1 Ea.	Threshold	171A 36" MS &ES10	719	PEM
2 Ea.	Door Sweep	345ANB	719	PEM
2 Set	Gasketing	S88		PEM
1 Ea.	Door Position switch	1078CTW		SEN
2 Ea.	Closer	7500BFJPR7500BF Series	689	NOR

GROUP 07

2 Pr.	Hinges	AB750	652	HAG
1 Ea.	Storeroom Lock	45H7D15H	626	BAS
1 Ea.	Door Stop	1209	626	TRI
1 Ea.	Closer	7500BFJPR7500BF Series	689	NOR
1 Ea.	Silencer	1229		TRI

GROUP 08

1.5 Pr.	Hinges	AB750	652	HAG
1 Ea.	Privacy lock	45HOL15H	626	BAS
1 Ea.	Occupancy Indicator	5004	626	TRI
1 Ea.	Door Stop	1209	626	TRI
1 Ea.	Silencer	1229		TRI
1 Ea.	Closer	7500BFJPR7500BF Series	689	NOR
1 Set	Gasketing	S88		PEM
1 Ea.	Auto Door Bottom	4301CRL	628	PEM

GROUP 09

3 Pr.	Hinges	AB750	652	HAG
1 Ea.	Storeroom lock	45H7D15H	626	BAS
2 Ea.	Flush Bolt x DP Strike	780F1790F x 82	626	DCI
2 Ea.	Closer	7500BF Series	689	NOR
2 Ea.	Door Stop	1209	626	TRI
1 Set	Split Astragal	29324CNB	628	PEM

HW10

1.5 Pr.	Hinges	AB750	652	HAG
1 Ea.	Storeroom Lock	45H7D15H	626	BAS
1 Ea.	Closer	7500BF Series	689	NOR
1 Ea.	Door Stop	1209	626	TRI
1 Ea.	Silencer	1229		TRI

END OF SECTION

SECTION 09 22 37
LATH AND ACCESSORIES

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This SECTION describes the requirements for furnishing and installing:
 - 1. Metal lath and metal accessories for portland cement plaster.
 - 2. Building paper and flexible flashing for portland cement plaster assemblies.
 - 3. Aluminum accessories for portland cement plaster assemblies.
- B. Suspended metal framing and furring is specified in SECTION 09 22 16 "NON-LOAD-BEARING METAL FRAMING".
- C. Portland cement plaster is specified in SECTION 09 22 00 "PORTLAND CEMENT PLASTERING".
- D. Building paper for locations other than Portland Cement Plaster is specified in SECTION 07 28 00 "BUILDING PAPER".
- E. Coordinate work with SECTION 07 29 00 AIR AND MOISTURE BARRIER.
- F. Gypsum sheathing is specified in SECTION 061645 "GYPSUM SHEATHING AND ROOF BOARD".

1.02 QUALITY ASSURANCE

- A. Qualifications, Installer: Installer shall specialize in the installation of lath and accessories and able to show completed jobs of comparable size and complexity to that required for this Work. Installer shall use only skilled and properly trained persons to perform the Work.
- B. Industry Association Recommendations: Comply with recommendations contained in the Northwest Wall and Plaster Bureau (NWCB) "Stucco Resource Guide", except where those recommendations conflict with specified or regulatory requirements.
- C. Regulatory Requirements:
 - 1. General Requirements: Materials and application shall be in compliance with requirements of the applicable building code and other regulations. Refer to SECTION 01 41 00 "REGULATORY REQUIREMENTS" for further information.
 - 2. Fire-Resistance Ratings: Where gypsum lath wall systems with fire-resistance ratings are indicated, provide materials and installations identical with those of applicable assemblies tested in accordance with ASTM E119 by fire testing laboratories acceptable to authorities having jurisdiction.

- D. Testing Laboratory Services: A representative from the Testing Laboratory will be at the Project Site full time during the installation of lathing, metal accessories, building paper, weather-resistant membrane, and flashing associated with exterior cement plaster.

1.03 PRODUCT DEUVERY, STORAGE, AND HANDUNG

- A. Deliver products and materials in original unopened packages, containers, or bundles with manufacturer's label intact and legible.
- B. Remove items .delivered in broken, damaged, rusted, or unlabeled condition from the Site immediately.
- C. Protect metal lath, metal framing materials, and metallic accessories from moisture and other sources of damage.
- D. Store metallic materials and accessories indoors, off the floor, away from construction activity.
- E. Comply with additional requirements of the manufacturer.

PART 2 - PRODUCTS

2.01 BUILDING PAPER

- A. Product: In compliance with FS UU-B-790a, Type I, Style 2, Grade D, 60 minute; Fortifiber "60 Minute Super Jumbo Tex", or accepted equal.
- B. Fasteners: Corrosion-resistant cap fasteners, of types and sizes to suit substrate, as recommended in writing by the membrane manufacturer.

2.02 FLEXIBLE FLASHING

- A. As specified in SECTION 07 27 10 "BUILDING PAPER".

2.03 METAL LATH

- A. Product: In compliance with ASTM C847 copper-bearing steel, coated with rust-inhibitive paint after cutting, or zinc-coated with G60 coating designation per ASTM A653, and as follows:
 - 1. Self-Furring Lath for Wall Assemblies: U.S. nominal weight of 3.4 pounds per square yard, fabricated in diamond mesh pattern with evenly spaced indentations to hold lath approximately 1/4-inch away from solid surfaces.
 - 2. 3/8-Inch Rib Lath for Suspended Plaster Soffits and Ceilings: U.S. nominal weight of 3.4 pounds per square yard, fabricated in herringbone mesh pattern with 3/8-inch deep ribs.

B. Fasteners:

1. General Requirements: Unless otherwise specified, select proper size, type, material, and finish for each application,
2. Nails and Staples: In compliance with FS FF-N-10S.
3. Screws:
 - a. In compliance with ASTM C1002, corrosion resistant, for attachment to metal framing 2S-gauge and lighter; ASTM C954 for attachment to metal framing 20-gauge and heavier.
 - b. Provide thread and head designs and lengths as recommended in writing by the manufacturer for uses and materials involved.

2.04 METAL ACCESSORIES

A. Acceptable Manufacturers: Keene Corporation, Superior Metal Trim, Western Metal Lath Inc., or accepted equal.

B. Material: Zinc or Zinc-alloy in compliance with ASTM B69. Plastic and galvanized steel are not acceptable.

C. Types:

1. Base Screeds: 1/2-inch deep with expanded metal wings.
2. Casing Beads and Plaster Stops: Type with expanded metal wings.
3. Corner Beads: 3/16-inch bead unless otherwise indicated, with expanded metal wings.
4. Foundation Weep Screed: Style NO.1 with weeps.
5. Corner Reinforcement: Cornerite, not less than 1.75 pounds per square yard, expanded metal lath with 2-inch minimum legs.
6. Strip Reinforcement: 6-inch wide strip of galvanized steel expanded metal lath, not less than 1.75 pounds per square yard.
7. Joints:
 - a. Control Joints: Style No. 15 for flat surfaces and Style No. 30 for corners; with expanded metal wings.
 - b. Expansion Joints: Style No. 40 with perforated metal wings.

2.05 ALUMINUM ACCESSORIES

- A. Manufacturer: Unless otherwise note, products of Fry Reglet Co. are specified. Provide specified products, or accepted equal.
- B. Material: Extruded aluminum, not less than 0.050-inch thick in compliance with ASTM B221 6063- T5 alloy-temper.
- C. Finish: Manufacturer's standard, factory-applied, chemical conversion coating for field painting.
- D. Types:
 - 1. Drip Screed: Fry Reglet Corp. "DS-875-875", with weep holes.
 - 2. Drip Screed and Soffit Vent: Fry Reglet Corp "DS-875-V-300".
 - 3. Single Point Screed: Superior Metal Trim "SSP078-OQOA" without weep holes.
 - 4. Reveal Screed: Superior Metal Trim "SSJ07-34A", unvented.

2.06 MISCELLANEOUS MATERIALS

- A. Metal Framing and Furring: As specified in SECTION 09 22 16 "NON-LOAD-BEARING METAL FRAMING".
- B. Provide additional components and materials required for a complete installation.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify that conditions are satisfactory for the installation of lath and accessories.
- B. All pipe, conduit, and similar materials shall have been installed, inspected, and accepted prior to commencing installation of lath.
- C. Do not begin installation until unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL REQUIREMENTS

- A. Install materials in conformance with the referenced standards, manufacturer's printed instructions, and as specified.

3.03 INSTALLATION OF BUILDING PAPER

- A. Install building paper using double layer installation method.
- B. Install each layer from lowest level, working up shingle fashion with horizontal joint laps 2-inches minimum and vertical joint laps 6-inches minimum. In adjacent sheets, offset joints not less than 48-inches. In alternate sheets, offset joints not less than 24-inches.

- C. When complete, both layers of paper shall be flat, without excessive warps or bulges, and free from unnecessary holes, cuts, tears, and other damage and defects.

3.04 INSTALLATION OF FLEXIBLE FLASHING

A. Openings:

1. Individually flash each opening head, jamb, and sill with flexible flashing in 12-inch wide strips and in lengths equal to rough opening dimension plus 12-inches.
2. Install with inner edge of flexible flashing turned into opening for full depth of wall framing, and with outer edge turned under wall paper at heads, and over top of wall-building paper at jambs and sills.
3. At opening corners, clip flexible flashing strips as required, neatly shape and fit into corners, and wrap and overlap ends of adjacent strips not less than 6-inches.
4. Press flexible flashing firmly in place to achieve full bond with substrate.

B. Penetrations:

1. Provide flexible flashing at joints caused by pipes, conduits, electrical boxes, and similar items penetrating building paper to create an weathertight seal between penetrating Objects and building paper.
2. Press flexible flashing firmly in place to achieve full bond with substrate.

3.05 REPAIRS TO BUILDING PAPER

- A. Prior to installing lath, repair tears and punctures in building paper by covering with another layer of building paper, lapped as specified, or by covering with strips of flashing membrane as specified. Make repairs before concealment by other Work.
- B. Remove and replace materials that cannot be successfully repaired by specified minor repair procedure

3.06 INSTALLATION OF METAL LATH

- A. General Requirements: Install metal lath in compliance with ASTM C1063 except as otherwise specified and where regulatory requirements are more stringent, and as indicated.
- B. Walls:
 1. Install metal lath over building paper and sheathing as indicated.
 2. Start first course at bottom of wall and work up. Extend lath over the attachment flange of screed. Stagger vertical joints. Lap end joints not less than 1-inch and horizontal joints not less than 1/2-inch.
 3. Insert lath as far as possible into reentrant space of metal frames, and notch to pass around jamb anchors.
 4. Hold lath 1/4-inch clear of electrical boxes, columns, and similar items projecting through the lath. Cut lath at control joints.

5. Attach lath to metal framing at 6-inches on center. Securely tie ends of lapped sheets not occurring over supports with tie wire, spaced 9-inches on center maximum.

C. Exterior Suspended Soffits:

1. Install lath taut to soffit suspension support system with long dimension of sheets perpendicular to furring members.
2. Secure metal lath to furring members with tie wire spaced maximum of 6-inches on center.
3. Lap ends of sheets on furring members not less than 1-inch. Stagger sheet end joints. Wire tie edge laps between furring members at maximum of 9-inches on center.

3.07 INSTALLATION OF METAL ACCESSORIES

A. General Requirements:

1. Install metal accessories in single lengths wherever length of run does not exceed longest standard stock length. Connect lengths of accessories as recommended by the manufacturer to ensure a continuous line.
2. Connect lengths of accessories as recommended by the manufacturer to ensure a continuous line.
3. Bring grounding edge of accessories to true lines, plumb, level. and straight with a tolerance of not more than 1/8-inch in 5-feet.
4. Install accessories to provide required depth of plaster and to bring plaster surface to required plane.
5. Miter or cope exposed accessories at corners with hairline joints and seal with sealant as specified in SECTION 079200 "JOINT SEALANTS". Seal butt splices in the same manner.
6. Fasten accessories at both ends and at a maximum of 12-inches on center along sides and as required to prevent dislodging or misalignment by subsequent operations. Wire tie to metal lath or metal framing.

B. Reinforcement:

1. Corner Reinforcement: Install continuous corner reinforcement full length of internal corners except where plaster will not be continuous from one plane to an adjacent plane.
2. Strip Mesh: Install strip mesh diagonally at corners of lathed openings and secure rigidly in place.

C. Control Joints: Install control joints where indicated at spacing not more than 15-feet on center, both ways. Maximum area within control joints shall not exceed 144 square feet and ratio of width to length shall not exceed 2.5 to one (2.5:1). Attach control joints directly to metal lath.

D. Expansion Joints: Install where indicated. Provide with sliding type splice plates at

butted joints and with matching end closures where applicable. Install with attachment only to metal; do not continue or tie lath across joint.

E. Foundation Weep Screeds: Install foundation weep screeds at bottom of walls, wall openings, and where indicated. Terminate building paper and lath on the attachment flange of the screed to ensure proper drainage.

F. Beads:

1. General Requirements: Set beads level, plumb, and true to line. Shim as required and align joints with concealed splices or tie plates.

2. Casing Beads and Plaster Stops:

a. Install casing beads and plaster stops to provide a minimum 1/8-inch clearance between adjacent construction and termination points of surfaces to receive plaster.

b. Provide beads where plaster abuts dissimilar construction and at perimeter of openings where edges or plaster will not be concealed by other Work.

3. Corner Beads: Install corner beads at external corners.

3.08 INSTALLATION OF ALUMINUM ACCESSORIES

A. General Requirements:

1. Install aluminum accessories and fasten in place as required to prevent dislodging or misalignment by subsequent operations.

2. Install moldings in full factory lengths wherever possible. Connect lengths of accessories as recommended by the manufacturer to ensure a continuous line.

3. Install accessories to provide required depth of plaster and to bring plaster surface to required plane.

4. Bring grounding edge of accessories to true lines, plumb, level, and straight.

5. Accurately cut and seal molding joints; miter corners.

6. Fasten at both ends and at a maximum of 12-inches on center along sides.

B. Types: Install aluminum accessories of required types as indicated.

3.09 FIELD QUALITY CONTROL

A. Testing Laboratory Services:

1. A representative from the Testing Laboratory will be at the Project Site full time during the installation of lathing, metal accessories, building paper, and flashings associated with portland cement plaster.

2. Upon successful completion of the installation the Testing Laboratory will submit written certification to the Owner and Architect that materials and their installation

are in compliance with the requirements of the Contract Documents.

B. Refer to SECTION 01 45 00 "QUALITY CONTROL" for further information.

3.10 PROTECTION

A. Protect lath and accessories from damage, deterioration, and displacement until permanently covered by other materials.

B. Provide temporary coverings where materials are subject to abuse and cannot be protected by permanent construction immediately after installation.

END OF SECTION

SECTION 09 24 00

PORTLAND CEMENT PLASTERING

PART 1 GENERAL

1.01 DESCRIPTION

- A. This SECTION describes the requirements for furnishing and applying Portland cement plaster.

1.02 QUALITY ASSURANCE

- A. Qualifications, Applicator: Applicator shall specialize in the application of Portland cement plaster, be able to show completed jobs of comparable size and complexity to that required for this Work. Applicator shall utilize only skilled and properly trained persons to perform the Work.
- B. Industry Association Standard: Materials and application shall meet or exceed recommendations contained in the Northwest Wall and Plaster Bureau (NWCB) Stucco Resource Guided except where those recommendations conflict with specified or regulatory requirements.
- C. Allowable Tolerance of Finished Surface: Maximum deviation from true plane shall not exceed 1/4-inch as measured from the line of a 10-foot straightedge placed at any location on the surface.
- D. Regulatory Requirements: Materials and application shall be in compliance with applicable building code and other regulations. Refer to SECTION 01 41 00 REGULATORY REQUIREMENTS for further information.
- E. Testing Laboratory Services: A representative from the Testing Laboratory will be at the Project Site full time during exterior plastering operations to observe application.
- F. Mock-Up:
1. After acceptance of sample panels for finish texture, provide a mock-up, approximately 12-feet by 12-feet in size and complete with reveals, and all accessories to demonstrate aesthetic effects and qualities of materials and application. Locate mock-up at the Project Site as directed.
 2. After acceptance, mock-up will be used as a standard for the Work, and may be incorporated into the Work, if practicable.
 3. Maintain accepted mock-up during construction in an undisturbed condition. Acceptance of mockups does not constitute approval of deviations from Contract Documents contained in mockups, unless the Architect specifically approves such deviations in writing.
 4. Refer to SECTION 01 43 39 MOCK-UPS for additional information.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's descriptive and technical data and illustrations, clearly marked to show specific product, materials, and compliance with specified requirements. Include manufacturer's printed recommendations, proportion mixes, and application instructions for factory-prepared materials.
- B. Samples: Submit 12-inch by 12-inch samples of each finish coat texture.
- C. Certificate of Compliance: Submit manufacturer's certification that materials comply with specified requirements.
- D. Applicator's Qualifications: Submit evidence of applicator's qualifications.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver manufactured materials in original unopened packages or containers with manufacturers label intact and legible.
- B. Keep cement and lime dry, stored off ground, under cover, and away from damp surfaces.
- C. Remove wet and deteriorated materials from the Project Site.
- D. Protect metallic materials and accessories from moisture and other sources of damage.
- E. Comply with additional requirements of the manufacturer.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Provide sufficient heat and ventilation at enclosed areas where Work of this SECTION is being performed to allow cement plaster to cure properly.
- B. Take precautionary measures necessary to assure that excessive temperature changes do not occur.
- C. Cold-Weather Requirements: Do not apply cement plaster unless minimum ambient temperature of 50 degrees Fahrenheit has been and continues to be maintained for a minimum of 48 hours prior to application and until plaster is cured.
- D. Hot-Weather Requirements: Protect cement plaster from uneven and excessive evaporation during hot, dry weather.

PART 2-PRODUCTS

2.01 BASE COAT MATERIALS

- A. Portland Cement: In compliance with ASTM C150, Type I or Type II.
- B. Plastic Cement: In compliance with ASTM C150, Type I or Type II, with added plasticizers not exceeding 12 percent of total volume of cement.

- C. Hydrated Lime: In compliance with ASTM C206, Type S.
- D. Admixture: Cem-FIL Corp. 'Cem-FIL AR Glass 1/2-inch alkaline-resistant chopped-glass fibers, or accepted equal.
- E. Water: Clean, potable, and free from substances harmful to plaster.
- F. Aggregates: In compliance with ASTM C897. Gradation, Base (Scratch and Brown). Coats shall be as follows:

Percent Retained by Weight (+2 percent)

U.S. Standard Sieve	Minimum	Maximum
No. 4 (4.75mm)	8	0
No. 8 (2.36mm)	0	10
No. 16 (1.18mm)	10	40
No. 30 (600 urn)	30	65
No. 50(300 um)	70	90
No. 100 (150 um)	95	100
No. 200 (75 um)	97	100

2.02 FINISH COAT MATERIALS

- A. Factory-prepared product containing all materials required for finish coat, except water; as manufactured by La Habra, King Stucco, or accepted equal.
 - 1. Finish Textures:
 - a. Smooth: 'Sand Smooth", matching Architect's sample.
 - b. Smooth: 'Sand Coarse", matching Architect's sample.
 - 2. Integral Color: Do not include integral color in finish coat materials.
- B. Painting of plaster finish coat is specified in **SECTION 09 91 00 PAINTING**.

2.03 CEMENT PLASTER

- A. Mixing:
 - 1. General Requirements:
 - a. Accurately proportion materials for each plaster batch with measuring devices of known value.

- b. Size batches for complete use within maximum of one hour after mixing.
 - c. Retemper plaster stiffened from evaporation, but do not use or retemper partially hydrated plaster.
 - d. Do not use caked or lumping materials, and remove such materials from the Project Site immediately.
 - e. Mix factory-prepared plaster in compliance with the manufacturer's printed instructions.
 - f. Use moist, loose sand in mix portions.
 - g. Withhold 10 percent of mixing-water until Mixing is almost complete, then as needed to produce necessary consistency.
2. Mechanical Mixing:
- a. Clean mixer of set or hardened materials before loading for new batch.
 - b. Maintain mixer in continuous operation while adding materials.
 - c. Conform to mixing sequence, cycle of operations, and time recommended by manufacturer of plaster materials.
3. Hand Mixing: Do not hand-mix, unless accepted by the Architect.
- B. Mix Proportions by Volume:
- 1. Scratch Coat: Four parts aggregate to one part cement, by volume.
 - 2. Brown Coat: Five parts aggregate to one part cement, by volume.
 - 3. Hydrated lime in an amount not exceeding 20 pounds per sack of Portland cement may be added to mix using Type I or Type II Portland cement; do not add hydrated lime to mixes containing plastic cement.
 - a. Plastic cement may be substituted for cement and lime. Use one part plastic cement for each part cement, measured dry; do not add lime or lime putty.
 - 4. Finish Coat: In compliance with the manufacturer's printed instructions.
 - 5. Admixture: 1/2 of 1 percent.

PART 3- EXECUTION

3.01 INSPECTION

- A. Verify that surfaces to be plastered are free of dust, loose particles, oil, and other foreign matter that would affect bond of plaster coats.

- B. Examine construction, grounds, and accessories to ensure that finished plaster surfaces will be true to line, level, and plumb, without requiring additional thickness of plaster.
- C. If unsatisfactory conditions exist, do not begin application until such conditions have been corrected.

3.02 PREPARATION

- A. Protection:
 - 1. Cover building openings in areas adjacent to plastering Work with plastic film.
 - 2. Protect finished surfaces applied prior to plastering by covering with a suitable non-staining material. Cover window and curtain-wall frames with plastic film.
 - 3. Maintain protection in place until completion of plastering Work.

3.03 APPLICATION

- A. Installation of Accessories: Specified in **SECTION 09 22 37 LATH AND ACCESSORIES**.
- B. Number of Coats: Provide three-coat application over metal lath as specified.
- C. Three-Coat Application of Cement Plaster:
 - 1. Apply plaster by hand or machine spray.
 - 2. Interrupt any plaster coat only at junctions of plaster planes, at openings, or at control joints.
 - 3. Apply scratch coat with sufficient material and pressure to form full keys through and to embed metal base. When firm, score in one direction.
 - 4. Apply brown coat to scratch coat, bringing out to grounds, flat to true surface, and free of imperfections that would reflect in finish coat.
 - 5. Reconsolidate brown coat by floating, and roughen to assure bond with finish coat.
 - 6. Apply in compliance with manufacturer's printed instructions and requirements of ASTM C926.
 - 7. Nominal Plaster Thicknesses for Vertical Surfaces Measured from Face of Lath:
 - a. Scratch Coat: 3/8-inch, minimum.
 - b. Brown Coat: 3/8-inch.
 - c. Finish Coat: 1/8-inch, minimum.
 - d. Total: 7/8-inch.

8. Nominal Plaster Thicknesses for Horizontal Surfaces Measured from Face of Lath:
 - a. Scratch Coat: 1/4-inch, minimum.
 - b. Brown Coat: 1/4-inch.
 - c. Finish Coat: 1/8-inch, minimum.
 - d. Total: 5/8-inch, unless otherwise required by accessory.
- D. Curing:
 1. Maintain moist conditions by fine fog spraying in compliance with ASTM C926.
 2. Cure scratch coat for a minimum of 48 hours, and maintain a minimum of 48 hours between application of scratch coat and brown coat
 3. Cure base coat for a minimum of 48 hours, and maintain a minimum of 7 days between the application of the brown coat and finish coat.
 4. Cure finish coat in compliance with the manufacturer's printed instructions.

3.04 COMPLETION

- A. Patching:
 1. Upon completion of application, point up plaster around trim and other locations where plaster meets dissimilar materials.
 2. Cut out and patch defective or damaged plaster.
 3. Match patching of defective or damaged plaster to original Work in form and texture.
- B. Cleaning:
 1. Remove plaster and protective materials from control and expansion joints, perimeter beads, and adjacent surfaces.
 2. Remove stains that would adversely affect subsequent finishes on plaster.
- C. When complete, plaster surfaces shall be flat; true to plane; and free from scaffold and tool marks, stains, or other damage or defects and shall be uniform in texture throughout each area of the Work.
- D. Cement plaster shall be in a condition ready to receive paint.

3.05 PROTECTION

- A. Protect Portland cement plaster from damage and deterioration until time of completion and acceptance by the Owner.
- B. Maintain Portland cement plaster in clean condition until painted.

END OF SECTION

SECTION 09 68 13

CARPET TILE

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Section describes the requirements for furnishing and installing carpet tile and associated materials.

1.02 QUALITY ASSURANCE

- A. Source Limitations:
 - 1. Obtain each type of carpet tile through one source from a single manufacturer.
 - 2. For each type of carpet tile, furnish carpet tile of the same dye lot or production run including that required for extra materials.
- B. Industry Standard: Carpet tile and adhesive shall meet or exceed the minimum standards contained in the Carpet and Rug Institute "Green Label Testing and Certification Program".
- C. Installer Qualifications: Installer shall be well trained and experienced in the installation of commercial carpet tile, approved in writing by the carpet tile manufacturer, and shall have regularly been providing installations of the types required for not less than five (5) years.
- D. Regulatory Requirements:
 - 1. General Requirements: Materials and installation shall be in compliance with the applicable building code and other regulations. Refer to Section 01 41 00 "Regulatory Requirements" for further information.
 - 2. Fire-Hazard Classification of Installed Flooring:
 - a. Flame Resistance: Pass CPSC FF-1-70 (ASTM D2859) methylamine pill test.
 - b. Radiant Panel Test: Critical Radiant Flux Class 1, greater than 0.45watts/square centimeter when tested in accordance with ASTM E648 glue-down.
 - c. Smoke Density: 450 or less, when tested in accordance with ASTM E662.
 - 3. Slip Resistance: Slip Resistance of Installed Carpet Tile shall be in compliance with ADA recommendations, Static Coefficient of Friction not less than 0.60 for flat areas and not less than 0.80 for ramps, under both

wet and dry-conditions, when tested in accordance with ASTM 02047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine".

4. Project Air Quality: When tested by an independent testing laboratory in accordance with Section 1350 of the California Collaborative for High Performance Schools (CHPS) protocol, emissions of formaldehyde, acrolien, benzaldehyde, acetaldehyde, propanal, butanal, pentanal, hexanal, septanal, octanal, nanonal, or decanal shall not be detected.
- E. Pre-installation Meeting: Schedule and conduct a pre-installation, meeting as specified in Section 01 31 00 "Project Management and Coordination".
- F. Mock-up:
1. Prior to beginning installation, provide a mock-up of carpet tile as specified hereinafter to demonstrate quality of materials and installation. Locate mock-ups where acceptable to the Architect.
 2. Obtain Architect's review and acceptance of mock-up prior to starting installation. Accepted mock-ups shall be used as a standard of workmanship for the remainder of the Work, and may be incorporated in the Work.
 3. Maintain accepted mockups during construction in an undisturbed condition. Protect from damage and deterioration.
 4. Acceptance of mockups does not constitute approval of deviations from Contract Documents contained in mockups, unless such deviations are specifically approved by Architect in writing.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's printed descriptive and technical data and illustrations, clearly marked to show specific product types, variations, and materials. Include manufacturer's printed installation instructions.
- B. Layout Drawings: Submit scaled drawings showing layout to each area to receive carpet tile; include pertinent installation details.
- C. Samples:
1. Submit two-full-size samples for each type, pattern, and color of carpet tile material selected.
 2. Submit 3-inch long samples of reducer strips showing colors for the Architect's selection.
 3. Submit 12-inch long samples of reducer strips in selected colors.
- D. Certificates of Compliance:

1. Submit manufacturers' written certification that products supplied for installation comply with regulatory requirements controlling use of volatile organic compounds and, comply with specified requirements.
 2. Submit Contractor's written certification that extra materials supplied have been inspected and reconfirmed to be the same as those used in the Work.
- E. Maintenance Data: Furnish manufacturer's printed recommendations for the care and maintenance of each type of resilient flooring to the College.
- F. Installers Qualifications: Submit written evidence that installer meets specified qualification requirements.
- G. Warranties: Submit review copy of manufacturer's warranty for each type of carpet.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store materials in manufacturer's original unopened containers with labels indicating brand names, colors and patterns, and quality designations legible and intact.
- B. Do not remove markings until materials have been inspected and accepted.
- C. Store materials in the original containers in clean, dry, enclosed spaces protected from weather supported above grade and slabs-on-grade.
- D. Maintain enclosed spaces protected from weather at a temperature range between 65 and 80 degrees Fahrenheit.
- E. Comply with additional requirements of the applicable manufacturer.

1.05 JOB AND ENVIRONMENTAL CONDITIONS

- A. Unless required otherwise by the applicable manufacturer, maintain the temperature in spaces to receive resilient flooring materials between 70 and 85 degrees Fahrenheit for a minimum of 48 hours prior to installation, during installation, and 48 hours after installation and thereafter maintain a temperature of not less than 55 degrees Fahrenheit until accepted.
- B. Do not deliver or install carpet tiles until finish painting is completed and dry and the permanent lighting, heating, and ventilating systems are in operation and controlled as required in each installation area.
- C. Do not deliver or install carpet tiles or accessories over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive as determined by floor covering manufacturer's recommended bond and moisture tests.
- D. Provide maximum ventilation during installation.
- E. Isolate area of installation from the remainder of the occupied building.

- F. Close areas to construction traffic during installation.
- G. Comply with additional requirements of the applicable manufacturer.

1.06 COORDINATION

- A. Prior to construction of each type of new substrate that is to support carpet tile, furnish information on substrate texture and condition required for resilient flooring Work.
- B. In advance of carpet tile installation, review details with the Architect and incorporate minor adjustments determined necessary.

1.07 CARPET TILE WARRANTY

- A. Materials Warranty: Warranty period shall be five (5) years from the date of Substantial Completion. Furnish carpet tile manufacturer's standard commercial warranty covering manufacturing defects to the Owner and Warrant the following directly or through carpet mill or fiber manufacturer:
 - 1. Wear: Face fiber in any given area shall not wear more than ten percent (10%) by weight during the warranty period under normal use, when properly installed and maintained.
 - 2. Moisture barrier: No loss of protection during the warranty period.
 - 3. Delamination: Carpet shall not delaminate from the secondary backing during the warranty period. Chair pads shall not be required.
 - 4. Tuft Bind: No loss of tuft bind, wet or dry, during the warranty period.
 - 5. Static Protection: No loss in static protection during the warranty period.
 - 6. Edge Ravel: Carpet shall not show continuous unraveling of yarn at the seams during the warranty period.
 - 7. Adhesive: Adhesive shall secure carpet tile to the floor substrate for the entire warranty period.
- B. Installation Warranty: Warranty period shall be for lifetime installation.
- C. Carpet tile areas that fail to perform shall be repaired or replaced without additional cost to the Owner. Misuse, abuse, damage, or improper maintenance shall not apply.
- D. Furnish carpet tile manufacturer's standard commercial warranty covering manufacturing defects to the Owner. Warranty period shall be five (5) years from the date of Substantial Completion.

1.08 EXTRA AND MAINTENANCE MATERIALS

- A. Extra Materials:

1. In addition to materials for completing installations required, furnish the following additional materials to the Owner for replacement and maintenance:
 - a. Carpet Tile: One (1) full factory carton for each 1,500-square feet, or fraction thereof, for each material, type, size, pattern, and color of tile installed.
 - b. Resilient Base:
 - 1) Ten (10) lineal feet for each 250 lineal feet, or fraction thereof, for each type, style, height, and color of base installed.
 - 2) Two percent (2%) of each type, style, height, and color of external and internal corners installed.
 - c. Accessories and Trim: Ten percent (10%) of each type, size, and color of accessory and trim installed.
 2. Furnish extra materials in typical field size units.
 3. Furnish extra materials from production runs or color lots the same as for that used in the installation.
 4. Deliver extra materials in manufacturer's original protective packaging, clearly labeled with the name of the Project and description of contents.
 5. Deliver extra materials to Project premises just prior to date of Substantial Completion and store in location directed.
 6. Include transmittal indicating materials and quantities supplied.
- B. Maintenance Materials: Furnish to the Owner one (1) full case of cleaner and one (1) full case of polish, both as recommended in writing by the applicable flooring manufacturer. Include a copy of each manufacturers recommended cleaning and maintenance procedures.

PART 2 - PRODUCTS

2.01 CARPET TILE

- A. CPT-1:
1. Manufacturer: **Ecumurx by Shaw**, or accepted equal.
 2. Product and Physical Characteristics: To be determined.
 3. Patterns and Colors: As selected by Architect from the manufacturer's full range of standards. Up to 3 patterns and colors may be used.

4. Size: 24-inches by 24-inches by 3/8-inch thick.
5. Static Load Limit: Not less than 125 psi per ASTM F970.
6. **Anti-Microbial Treatment: Manufacturer's standard treatment for use in childcare facilities.**

2.02 APPLICATION MATERIALS

- A. General Requirements: Materials shall be premium quality, of types and brands furnished or recommended in writing by the flooring manufacturer for the specific installation conditions.
- B. Application Materials: Types and brands as recommended in writing by the flooring material manufacturer for the specific installation conditions, and include:
 1. Adhesives: Premium quality, solvent-free, non-toxic, low-VOC, non-staining, moisture resistant, and alkali-resistant complying with regulations governing volatile organic compounds (VOCs) and CPRI Indoor Air Quality test criteria, recommended in writing by the applicable manufacturer for commercial use, and suitable to products and conditions..
 2. Primers: Premium quality, low-volatile organic compound (VOC) as recommended by manufacturer and complying with regulations governing VOCs.
 3. Crack Filler and Leveling Compound: Portland cement type with minimum 4000 psi rating and capable of producing a feather edge, as manufactured by Ardex, Raeco, or accepted equal. Prepare and mix compound in compliance with the manufacturer's printed instructions.

2.03 ACCESSORIES:

- A. General Requirements: Materials shall be premium quality, of types and brands furnished or recommended in writing by the flooring manufacturer for the specific installation conditions.
- B. Accessory Materials: Types and brands as recommended in writing by the flooring material manufacturer for the specific installation conditions, and include:
 1. Reducer Strips: Johnsonite "CTA" series, 2-1/2" wide rubber or vinyl molding tapered-edge style, of thickness to suit abutting floor covering material to accommodate wheeled traffic, or accepted equal. Provide strips as required to suit actual thickness of carpet tile and adjacent flooring. Provide colors to match adjacent resilient base, unless otherwise directed.
 2. Miscellaneous materials: Tape, thread, and other items necessary for installation.

2.04 RESILIENT BASE (RB)

- A. General Requirements: Materials shall be premium quality, of types and brands furnished or recommended in writing by the flooring manufacturer for the specific installation conditions.
- B. Resilient Base Materials: Types and brands as recommended in writing by the flooring material manufacturer for the specific installation conditions, and include:
 - 1. Rubber Base: In compliance with ASTM F1861, Group I (solid), Type TP - Thermoplastic Rubber, as manufactured by Johnsonite Rubber, or accepted equal.
 - 2. Colors: As selected by the Architect from manufacturer's full range of standards.
 - 3. Styles:
 - a. Style A (straight) for use with carpet tile.
 - b. Style B (cove) for use at hard flooring surfaces.
 - 4. Thickness (Gauge): 1/8-inch.
 - 5. Height: 4-inches.
 - 6. Corners:
 - a. For Cove Style Base: Factory-pre-molded internal and external corners to match base material.
 - b. For Straight Style Base: Factory pre-molded external corners to match base material.
 - 7. End Stops: Factory pre-molded ends to match base material. Furnish with cove style base.
 - 8. Lengths: Furnish continuous rolls in lengths as long as practicable to suit the conditions of installation with minimum number of joints.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine substrates and conditions under which carpet tile is to be installed. Verify that conditions are satisfactory for the installation of carpet tile flooring, do not install carpet tiles over substrate that is uneven, cracked, or has other detrimental conditions that could affect the performance and appearance of the carpet tiles.
- B. Verify that concrete substrates to receive carpet tiles have been prepared in compliance with ASTM F1869 and flooring manufacturer's printed instructions.

- C. Test concrete substrates to receive carpet tiles using pH test and calcium chloride methods and/or other methods recommended in writing by the applicable manufacturer to ensure moisture content and pH levels are acceptable. Comply with ASTM E1907, ASTM F1869, and the manufacturer's printed instructions.
 - 1. Perform not less than three tests for the first 1000 square feet of concrete substrates and one additional test for each additional 1000 square feet of concrete substrate.
 - 2. Conduct additional tests around the perimeter of the room, at columns, and where moisture may be evident.
- D. Additional vapor emission testing and vapor emission control system treatment is specified in Section 07 38 00 "Water Vapor Emission and Alkalinity Control System for Concrete Slabs" for conditions when testing reveals vapor emission levels exceed specified maximums.
- E. Unless more restrictive emission levels are required by the manufacturer do not install carpet tiles until the vapor emission level has been reduced to 5 pounds/1000 square feet/24 hours or less and alkalinity level is as required by the manufacturer.
- F. Before installation, inspect carpet tile and other materials for manufacturing flaws, shipping damage, and other non-compliant conditions. Do not install carpet tile or other materials found not in compliance.
- G. If unsatisfactory conditions exist; do not begin installation until such conditions have been corrected. Beginning installation will be construed as acceptance of substrates and other job conditions.

3.02 PREPARATION

- A. Protection:
 - 1. Protect adjacent surfaces and finishes and newly placed Work as necessary from damage during installation of carpet tiles.
 - 2. Protect products from damage during field handling and installation.
- B. Surface Preparation:
 - 1. Prepare surfaces in compliance with the applicable manufacturer's printed instructions and specified reference standards.
 - 2. Remove dirt, oil, grease, and other foreign matter from surfaces to receive resilient flooring materials.
 - 3. Patch cracks greater than 1/16-inch with crack finer and leveling compound and allow it to dry.

4. Grind high areas and fill low areas with crack filler and leveling compound as required to provide a flat surface with no more than 1/8-inch variation from the plane within 10-feet in any direction. Allow compound to dry.
5. Prime surfaces, if recommended by resilient flooring adhesive manufacturer, and allow it to dry.

C. Materials Preparation:

1. Prior to installation pre-ventilate carpet tile in a well-ventilated, uninhabited space, other than the installation areas. Comply with the manufacturer's printed recommendations.
2. After pre-ventilating period is completed, acclimate tile and associate materials in areas where they will be installed for not less than 48 hours prior to start of installation, unless longer conditioning period is recommended in writing by the manufacturer.
3. Uncoil resilient base and lay flat for not less than 48 hours prior to start of installation.
4. Comply with additional requirements of the applicable manufacturer.

3.03 INSTALLATION

A. General Requirements:

1. Install carpet tile and associated products in compliance with applicable manufacturer's printed instructions and warranty requirements, applicable portions of CRI 104 "Standard for installation Specification of Commercial Carpet", accepted layout drawings as indicated and noted, and as specified.
2. Install materials using tools recommended by the manufacturer.

B. Adhesives:

1. Mix and apply adhesives in compliance with the manufacturer's printed instructions.
2. Provide safety precautions during mixing and applications as recommended by adhesive manufacturer.
3. Apply adhesives uniformly over surfaces.
 - a. Apply adhesives with notched trowel or other suitable tool. Clean trowel and rework notches as necessary to ensure proper application of adhesive.
 - b. Apply no more adhesive at any time than can be covered by resilient flooring material within the recommended working time of the adhesive. Remove adhesive that dries or films over.

- c. Do not soil walls, bases, or adjacent areas with adhesive. Promptly remove spillage or excess adhesive with solvent approved by the carpet tile and adhesive manufacturers.

C. Reducer Strips:

1. Install reducer strips where a carpet tile terminates exposing the edge of the carpet tile and where the carpet tile meets differing floor material and no threshold or divider is indicated.
2. Center strips under doors where flooring terminates at a door opening, unless otherwise indicated. Fit edges to adjoining floor coverings.
3. Bond securely to substrate with adhesive in straight, true lines.
4. Top of strips shall be flush with top of flooring material.

D. Carpet Tile:

1. Install carpet tile to produce smooth, even surface with joints tightly butted and accurately aligned. Adhere carpet tiles directly to the substrate.
2. Unless otherwise indicated, symmetrically arrange with axis of room or space, laying tire from center and working toward perimeter.
3. Lay tile parallel to room axis in straight courses with cross-joints parallel.
4. Lay tile with grain or pattern alternating in adjacent tiles (basket weave or quarter-turn pattern), unless indicated or directed otherwise.
5. Do not lay tile less than one-half width of a field tile, except where accepted by Architect for irregularly shaped rooms or spaces.
6. Cut border tile neatly and accurately to fit within 1/64-inch of abutting surface. Neatly trim carpet tile free from loose ends and projecting frays.
7. Fit tile neatly and tightly into breaks and recesses, around pipes and penetrations, under saddles or thresholds, and around permanent cabinets and equipment.
8. At door openings where tile and other floor materials meet, make joinings under centers of doors.
9. Following installation of tile, divert traffic from installation area for at least 24 hours.

E. Resilient Base

1. General:

- a. Patch, fill, and level subfloors under base to provide a straight line between base and flooring material, parallel to top of base on wall. Install base around perimeter of room or space and at base of partitions-as indicated.
 - b. Unroll base material and cut into accurate lengths to minimize the number of joints.
 - c. Match edges at seams or double-cut adjoining lengths.
 - d. Install with tight butt joints with no joint width greater than 1/64-inch.
 - e. Apply adhesive and firmly adhere to wall surfaces.
 - f. Press down so that bottom edge follows floor profile.
 - g. Accurately scribe base to abutting materials.
 - h. Provide same type and color base for casework as that on adjacent walls, extending base to wall at cabinet returns and end panels.
2. Cove Style Base: Install following installation of resilient flooring. Install pre-molded corners at internal and external corners. Install end stops at exposed ends of base.
 3. Straight Style Base: Install prior to installation of carpet; bottom edge of base shall rest on unfinished floor surface. Form internal corners by coping. Install pre-molded external corners.

3.04 FINISHING AND CLEANING

- A. Immediately, after installation of resilient flooring, implement initial maintenance procedures in compliance with applicable manufacturer's maintenance warranty requirements. Refer to manufacturer's printed maintenance for complete details.
- B. Upon completion, vacuum-clean carpeting using CRI "Green Label" approved, high-efficiency particulate air (HEPA) filtration-equipped vacuum cleaner of the type recommended by the manufacturer.
- C. Remove stains and spots in compliance with the carpet tile manufacturer's recommended procedures.
- D. Thoroughly clean carpet tile and allow it to dry.
- E. Remove carpet tile that cannot be satisfactorily cleaned, as judged by the Architect, and provide matching replacement at no additional cost to the Owner.

3.05 COMPLETION

- A. When complete, carpet tile and accessories shall be fully adhered to substrate, lay flat and fully in place, be true to plan, and free from warps, bubbles, bulges, and offsets across joints.
- B. Exposed surfaces shall be clean and free from adhesive, cuts, scratches, stains, discoloration, and other defects and damage.
- C. Top of reducer strips shall be flush with top of resilient flooring material.
- D. Joints in resilient base shall be fitted tightly together and free of gaps wider than 1/32-inch.
- E. Tile shall be accurately aligned, straight, and free of gaps wider than 1/32-inch.
- F. Carpet tiles shall be uniform in appearance and free from dirt, dust, and other foreign embedded material.

3.06 PROTECTION

- A. Protect carpet tile from damage and deterioration until time of completion and acceptance by the Owner.
- B. Protect completed flooring from traffic and damage with a covering of heavy Kraft paper, taped at edges. Do not use plastic sheeting. Provide suitable board protection, as recommended by the flooring manufacturer, when moving heavy materials across flooring and as needed to further protect the installation. Do not permit traffic on flooring without adequate protection. Remove protection prior to completion inspection.
- C. Maintain temperature and humidity as recommended by the applicable manufacturer to protect the Work until acceptance.

END OF SECTION

SECTION 32 80 00

IRRIGATION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The work in this section consists of furnishing, layout and modifying an existing irrigation system.
- B. Related work specified elsewhere includes:
 - 1. Section 31 23 00 EARTHWORK AND GRADING
 - 2. Section 31 23 33 EARTHWORK FOR UTILITIES
 - 3. Division 26 00 00 ELECTRICAL

1.2 QUALITY ASSURANCE

- A. Manufacturer's Specifications: Follow manufacturer's current printed specifications and drawings in all cases where the manufacturers of articles used in the Contract furnish directions covering points not specified or shown in the drawings.
- B. Ordinances and Regulations: All local, municipal and state laws, codes and regulations governing or relating to all portions of this work are hereby incorporated into and made a part of these Specifications. Anything contained in these Specifications shall not be construed to conflict with any of the above codes, regulations or requirements of the same. However, when these Specifications and Drawings call for or describe materials, workmanship or construction of a better quality, higher standard, or larger size than is required by the above codes and regulations, the provisions of these Specifications and Drawings shall take precedence. Furnish without extra charge additional materials and labor required to comply with above rules and regulations.
- C. References, Codes and Standards:
 - 1. AB 325 and 1881 State of California Model Water Efficient Landscape Ordinance, California Code of Regulations Title 23.
 - 2. California Environmental Quality Act (CEQA)
 - 3. Water Use Classification of Landscape Species (WUCOLS).
 - 4. American Society of Irrigation Consultants (ASIC) Design Guidelines.
 - 5. California Landscape Standards, California Landscape Contractors Association, (CLCA) Sacramento, California.

7. CAL-OSHA, title 8, Subchapter 4-Construction Safety Orders and Subchapter 7-General Industry Safety Orders.
 8. California Electric Code.
 9. California Plumbing Code (UPC) published by the Association of Western Plumbing Officials.
 10. NFPA 24, Section 10.4, Depth of Cover.
 11. Underwriters Laboratories (UL): Electrical wiring, controls, motors and devices, UL listed and so labeled.
 12. American Society of Testing Materials (ASTM).
- D. Furnish without extra charge any additional material and labor when required by the compliance with all above mentioned codes and regulations, though the work be not mentioned in these specifications or shown on the drawings.
- E. Reclaimed Water: Contact water company supplying reclaimed water prior to the commencement of installing the irrigation system to coordinate inspection of the work and to verify all codes and regulations regarding use of reclaimed water. Provide all required signage and other warnings.
- F. Experience: Assign a full-time employee to the job as supervisor for the duration of the Contract with a certified landscape technician, irrigation certification through CLCA or minimum of four (4) years experience in landscape irrigation installation.
- G. Labor Force: Provide a landscape installation and maintenance force thoroughly familiar with, and trained in, the work to be accomplished to perform the task in a competent, efficient manner acceptable to the Owner's Representative.
- H. Explanation of Drawings:
1. Due to the scale of the Drawings, it is not possible to indicate all offsets, fittings, sleeves, etc., which may be required. Carefully investigate the conditions affected all of the work and plan accordingly, and furnish all required fittings. Install system in such a manner to avoid conflicts with planting, utilities and architectural features.
 2. Do not install the irrigation system as shown on the Drawings when it is obvious in the field that obstructions, grade differences or discrepancies in arc dimensions exist that might not have been considered in engineering. Bring such obstruction or differences to the attention of the Owner's Representative. In the event this notification is not given, the Contractor shall assume full responsibility for any revision necessary.
- I. Trench Interference with Tree Root Systems:
1. Prior to trenching, layout main and lateral line locations within Drip Line of trees and review locations with Owner's Representative. Relocate any lines

that may interfere with existing root systems to avoid or reduce damage to root systems as accepted by Owner's Representative.

2. Mechanical Trenching is not allowed within dripline of existing trees to be protected except as approved by Landscape Architect.

1.3 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

- A. The Drawings show, if applicable, existing above and below grade structures and utilities that are known to the Owner. Locate known existing installations before proceeding with construction operations that may cause damage to such installations. Existing installations shall be kept in service where possible and damage to them shall be repaired with no adjustment of Contract Sum. Verify with Owner if As Built drawings are available.
- B. If other structures or utilities are encountered, request Owner's Representative to provide direction on how to proceed with the Work. If a structure or utility is damaged, take appropriate action to ensure the safety of persons and property.
- C. Prior to construction contractor is to field verify location of existing irrigation systems to be removed and/or replaced. Maintain any existing systems as required by the Drawings and Specifications, including temporary retention of systems necessary to maintain existing on site and adjacent planting. Hand watering may be required to maintain existing planting while system is modified.

1.4 SUBMITTALS, in accordance with Section 01330.

A. Materials List:

1. Submit required copies of the cut sheets and a complete list of materials proposed for installation, along with any proposed substitutions clearly identified and obtain the Owner Representative's written approval thereof before proceeding. Use only accepted materials and items of equipment.
2. List all materials by manufacturer's name and model number.

B. Substitutions:

1. If the Contractor desires to substitute a product, he shall list each item and note it as a "substitution" and provide the following information:
 - a. Descriptive information describing its similarities to the specified product.
2. If the product is approved and, in the opinion of the Owner's Representative, the substituted product does not perform as well as the specified product, the Contractor shall replace it with the specified product at no additional cost to the Owner.

C. Record Drawings:

1. Dimension the location of the following items from two (2) permanent points of reference such as building corners, sidewalks, road intersections, etc.:
 - a. Isolation valves.
 - b. Routing of sprinkler pressure lines (a dimension at least every 100 feet and as required to identify all changes in direction and location).
 - c. Remote control valves.
 - d. Routing of control valves.
 - e. Quick coupling valves.
 - f. All sleeve locations.
 - g. Routing of all control wiring.
 - h. Include all invert elevations below 12".
2. Deliver a reproducible record drawing to the Architect within seven (7) working days before the date of final review. Delivery of the record drawings shall not relieve the Contractor of the responsibility of furnishing required information in the future.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Furnish and deliver materials in manufacturer's packaging, bearing original legible labeling.
- B. The Contractor is cautioned to exercise care in handling, loading, unloading, and storing PVC pipe and fittings. All PVC pipe shall be transported in a vehicle which allows the length of the pipe to lie flat so as not to subject it to undue bending or concentrated external load at any point. Any section of pipe that has been dented, cracked, or otherwise damaged shall be discarded and, if installed, shall be replaced with new piping.

1.6 TRENCH INTERFERENCE WITH TREE ROOT SYSTEMS:

- A. Prior to trenching, layout main and lateral line locations within Drip Line of trees and review locations with Owner's Representative. Relocate any lines that may interfere with existing root systems to avoid or reduce damage to root systems as accepted by Owner's Representative.

1.7 SEQUENCING AND SCHEDULING

- A. Acceptance: Do not install main line trenching prior to acceptance by Owner's Representative of rough grades completed under another Section.
- B. Coordination: Coordinate with the work of other sections to insure the following sequence of events:
 1. Sleeves and Conduits: Installation of all sleeves and conduits to be located under paving and through walls prior to placement of those materials.
 2. Bubbler Heads: Install after placement of tree, but prior to backfill with planter soil mix.

3. On-Structure Equipment: Install piping and risers after waterproofing is accepted.
4. Sprinkler Head in Pots: Install riser and seal the penetration of the pot prior to backfill of pot with drainage materials and planter soil mix.
5. Coordinate work schedule with Owner to avoid disruption of landscape maintenance of existing landscaping.
6. Install piping prior to soil preparation (planting soil amendment installation).

1.8 WARRANTY, per Section 01786.

- A. In addition to manufacturer's guarantees and warranties, work shall be warranted for one (1) year from date of final acceptance against defects in material, equipment and workmanship. Warranty shall also cover repair of damage to any part of the premises resulting from leaks or other defects in materials, equipment and workmanship to the satisfaction of the Owner.
- B. Include a copy of the warranty form in the Operation and Maintenance Manual.

1.9 OPERATION

- A. Routine: Inspect and adjust all spray heads and control valves including raising or lowering of spray head heights to accommodate plant growth and weather conditions.
- B. Controller: Inspect regularly for power interruption and reset clock as required. Adjust station timing to accommodate changes in plant growth and weather conditions.
- C. System Failure: Perform all repairs within one (1) operating period. Replacements to match removed products and materials in all respects. Report promptly all damage not resulting from Contractor's operations. Repair all damage caused by Contractor at no expense to Owner.
- D. Climate Change: Set and program automatic controllers in response to seasonal requirements and requirements of newly planted materials.

PART 2 - PRODUCTS

2.0 PIPE

- A. Pressure Main Line Pipe and Fittings: All PVC fittings shall bear the manufacturer's trademark name, material designation, size, applicable I.P.S. schedule and NSF seal of approval.
- B. All main line pipe shall be solvent welded and manufactured from purple-colored PVC material and shall be printed on two sides with the wording "CAUTION-RECLAIMED WATER" every 24 inches along pipe.

1. PVC Pressure Rated Pipe: ASTM D2241 NSF approved Type I, Grade I, solvent welded PVC with an appropriate standard dimension ratio (S.D.R.).
 2. PVC Scheduled Pipe: ASTM D1785 NSF approved, Type I,
 3. Grade I, solvent welded PVC.
 4. PVC Solvent-weld Fittings: ASTM D2466 Schedule 40, 1-2, II-I NSF approved.
 5. Solvent Cement and Primer for PVC solvent-weld pipe and fittings: Type and installation methods prescribed by the manufacturer.
 6. Connections between Main Lines and RCVs: Schedule 80 PVC (threaded both ends) nipples and fittings unless required otherwise by local jurisdiction.
 7. Valves 2-inch and larger shall be flanged only.
 8. Copper pipe shall be Type K or Red Brass where threaded joints are required and Type L otherwise.
- C. All lateral line pipe shall be solvent welded Schedule 40 manufactured from purple-colored PVC material and shall be printed on two sides with the wording "CAUTION-RECLAIMED WATER" every 24 inches along pipe.

2.1 REMOTE CONTROL VALVE: As shown on Drawings and with the following minimum requirements:

- A. Remote control valves shall be those normally manufactured for irrigation systems and shall have a slow, consistent speed of closure through entire closing operation, including last portion. To ensure this, the effective diaphragm working area/valve seating opening ratio must be a minimum 3 to 1.
- B. Shall be mechanically self-cleaning to help prevent diaphragm or solenoid port plugging. To ensure this, the flush rod should be tapered to vary the size of the port opening as the diaphragm raises and lowers, thus allowing trapped material to escape. Rod is to be finished with a serrated surface to help scrub trapped material out. Screens not acceptable.
- C. Shall have removable valve seat so valve can be repaired without removal from irrigation line.
- D. Shall have ability to operate manually without the use of wrenches or special keys.
- E. Shall have one-piece solenoid that attaches directly to valve without shunts or clips that can be lost.
- F. Shall have cross top handle to adjust maximum travel of diaphragm to allow "tuning" of valve and closure.

2.2 BOX FOR REMOTE CONTROL VALVE:

- A. Rectangular plastic valve box with lid - Ametek, Carson, Christy, Rain Bird or accepted equal in green color (unless noted otherwise), with non-hinged bolt down lid marked "irrigation". Box body shall have knock outs. Do not saw cut body. The minimum size box is as shown on Drawings. Increase box size as required to fit. Valve box lids are to indicate the controller letter and station number of valve as accepted by Owner's Representative. Also refer herein to required polyurethane tag at valve solenoid control wire under Control Wires. Locate the identification in center of the lid. Provide separate box for each valve. Provide H/20 Loading concrete boxes with bolt-down concrete lids for all valves that occur in paved areas.

2.3 CONTROL WIRES

- A. Connections between automatic controllers and the solenoid-operated electric control valves shall be made with direct burial copper wire 14- AWG-UF 600 volt (minimum size). Pilot wires shall be a color other than white, and shall be a different color for each automatic controller with wires sharing a common trench. Common wires shall be white in color, with a different color stripe for each controller with wiring sharing the same common trench. No stripe is required if multiple controller wiring is not present.
- B. Size of wire shall conform to the remote control valve manufacturer's specification for control wire sizes, but in no case shall the control wire be smaller than #14. Runs over 2,000 lineal feet shall be #12- AWG-UF 600 volt copper wire.
- C. All wire splices are to be made within a valve box, with a copper crimp-type connector, and a "3-M" #DBY splice kit or Rain Bird "DBTWC25".
- D. Use continuous control wiring between controllers and remote control valves (no splices).
- E. Provide polyurethane tag at valve solenoid control wire that shows the controller number and station number. Also refer to valve box lid identification.
- F. Provide a spare control wire in each RCV box for future.

2.4 SPRAY HEADS

- A. Pop-up as shown on drawings and with the following minimum requirements:.
- B. Shall have approximately 30 psi water pressure coming out of nozzle to prevent "fogging" or misting. Shall have pressure-compensating devices.
- C. Shall have ability to prevent low head drainage. Use heads with integral check valves.

1. EXAMPLE – Rain Bird 1800 Spray Body with SAM -PRS Series

2. Shall not have spray blocked by turf or shrubbery; use minimum 4" pop-ups in turf areas.

2.5 ROTOR HEADS

- A. As shown on drawings and with the following minimum requirements:
- B. Heads shall have exact matched precipitation rates. Radius and precipitation rates must be the same.

1. EXAMPLE – Rain Bird 5000/5000 Plus Series with MPR, PRS and SAM

2.6 QUICK COUPLER VALVES:

- A. Quick coupler valves shall be as listed on the Drawings with 10" diameter box and lid similar to isolation valve box described below.
- B. Quick coupler valves shall be equipped with purple covers. Quick coupler valve box and lids shall be green plastic and shall be marked "Reclaimed Water."

2.7 ISOLATION VALVE:

- A. Valves 3 inches and smaller: 125 lb. WSP bronze gate valve with screw-in bonnet, non-rising stem and solid wedge disc, NIBCO T-113 K, or approved equal. Valves shall be line size.
- B. Valves larger than 2": shall have square nut stem and o-ring connections for key operation.

2.8 BOX FOR ISOLATION VALVE:

- A. 10" diameter plastic, Ametek, Brooks, Christy, Rain Bird with bolt down lid marked "irrigation," or accepted equal. Avoid locating valve in paved areas. Provide H/20 Loading concrete box with bolt-down concrete lid if valve is located in paved area. Obtain location approval by Owner's Representative.

2.9 SWING JOINTS

- A. Sprinklers and Bubblers: Use Dura, Lasco, Rain Bird or equal pre-assembled swing joints with O-rings.
- B. Quick Coupling Valve: Dura 1-inch 1-A2-1-11-18 pre-assembled swing joint with O-rings and Dura quick lock to receive stabilizing rod.

2.20 CONDUIT/SLEEVES

- A. Sleeving shall be Schedule 40 PVC pipe sleeves and a minimum of two times the aggregate diameter of all pipes contained within the sleeve. Provide vertical sweep for all electrical conduit on each side of hardscape and terminate ends at 12" minimum depth and 12" from hardscape surface.

2.20 RCV IDENTIFICATION TAGS:

- A. Plastic or brass tags with valve number, approximately 2" by 2" with number imprinted, as accepted by Owner.

2.20 MISCELLANEOUS INSTALLATION MATERIALS

- A. Solvent Cement and Primers for Solvent-weld Joints: Make and type approved by manufacturer(s) of pipe and fittings. Maintain cement proper consistency throughout use.
- B. Pipe and Joint Compound: Permatex: Do not use on sprinkler inlet port.

2.21 MISCELLANEOUS EQUIPMENT/ACCESSORIES

- A. Concrete for equipment pads (and thrust blocks if Bell-Type Pipe with O-Rings is required): Poured-in-place Class A concrete per Section 90 of the Caltrans Standard Specifications.
- B. Sleeves and Conduits: See Drawings.
- C. Key(s) for Quick-Coupling Valves:
 - 1. Type: Same manufacturer as Quick-Coupling Valve.

2.22 OTHER EQUIPMENT:

- A. As shown on Drawings and required for a fully functional irrigation system.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Sleeves and Conduits: Verify that all installed sleeving and conduits are undisturbed and are free of defects or errors introduced by the work of other sections.
- B. Water Meter/Water Pressure: Test and verify that existing water pressure is the minimum pressure at maximum system g.p.m. to operate the irrigation system as indicated on the drawings.
- C. Stub-outs: Verify that all stub-outs to be provided under another contract are correctly sized, located and installed as noted on Drawings.
- D. Notification: Submit written notification to Owner's Representative within ten (10) working days of above inspections describing all acceptable and non-acceptable site conditions.

1.2 TRENCH LAYOUT/INTERFERENCE WITH TREE ROOT SYSTEMS:

- A. Prior to trenching, layout main and lateral line locations within Drip Line of trees and review locations with Owner's Representative. Relocate any lines that may interfere with existing root systems to avoid or reduce damage to root systems as accepted by Owner's Representative.

3.3 CONNECTIONS TO SERVICES

- A. Provide and coordinate connection to existing irrigation system.
- B. Provide and coordinate connection of control wires to existing irrigation controller.

3.4 INSTALLATION

- A. Install irrigation system components in accordance with this Section, with the Drawings, with the manufacturer's recommendations, and with established industry standards. The Contractor shall do nothing that may jeopardize any manufacturer warranty.
- B. Conduits and Sleeves:
 - 1. Coordination: Provide conduits and sleeves and coordinate installation with other trades.
 - 2. Extent: Install conduits and sleeves where control wires and pipes pass under paving or through walls as shown on Drawings. Extend twelve inches (12") beyond edges of paving and walls and cap ends until ready for use.
- C. Excavating and Trenching:
- D. Pipe Layout: Layout pipe lines within Spread of Tree Branches as described above in Section
- E. TRENCH INTERFERENCE WITH TREE ROOT SYSTEMS.
- F. Dig trenches wide enough to allow a minimum of three inches (3") between parallel pipe lines. Provide a minimum cover from finish grade as follows:
 - 1. 24-inches Deep: Over pipe on pressure side of irrigation control valve, control wires and quick-coupling valves.
 - 2. 36-inches Deep: Over all pipe and pipe sleeves under roadways, parking lots, entrance to parking lots and Fire-Access Lanes per NFPA 24, Section 10.4.4.
 - 3. 18-inches Deep: Over pipe on non-pressure side of irrigation control valve.
 - 4. Direct Burial PVC Piping Under Pavement: Provide a minimum of 4 inches of sand backfill on all sides and 24 inches cover to bottom of paving.
 - 5. On-Structure: Protect fabric with 2-inch layer of planting soil mix or as otherwise detailed.

G. Pipeline Assembly:

- 1 Install pipe and fittings in accordance with manufacturer's current printed Specifications.
- 2 Clean all pipes and fittings of dirt, scale and moisture before assembly.
- 3 Solvent-welded Joints for PVC Pipes:
 - a. Solvents: Use solvents and methods specified by pipe manufacturer.
 - b. Curing Period: Minimum of one (1) hour before applying any external stress on the piping and at least 24 hours before placing the joint under water pressure.
4. Threaded Joints for Plastic Pipes:
 - a. Use Permatex on all threaded PVC fittings except sprinkler heads and quick coupler valve ACME threads.
 - b. Joining: Use strap-type friction wrench only. Do not use metal-jawed wrench. Assemble finger tight plus one or two turns.

H. Laying of Pipe:

- a. Bedding On-grade: Remove from trench all rocks or clods. Bed pipe in at least 2 inches of soil excavated from trench. Backfill on all sides of piping to provide a uniform bearing.
- b. Snaking: Snake pipe from side to side of trench bottom to allow for expansion and contraction. Minimum allowance for snaking is one (1) additional foot per 100 ft. of pipe.
- c. Moisture Restrictions: Do not lay PVC pipe when there is water in the trench. Do not assemble PVC pipe unless the pipe is dry.

I. Control Valves:

1. Install in valve boxes where shown on Drawings and group together where practical. Install box flush with finish grade, not necessarily level. If valve occurs in drainage swale, relocate out of drainage swale as approved by Owner's Representative.
2. Where two or more valves are installed adjacent to each other, provide at least six inches (6") separation. Align boxes in a row, perpendicular with pavement edge.
3. Permanently mark valve box lid with 2" black valve number and controller letter or with numbered metal tag inside box as approved by Owner's Representative.
4. Refer to control wiring for required spare wire in each valve box.

J. Sprinkler Head Installation:

1. Pop-up Heads:

- a. Place all sprinkler heads in planting areas with top of heads set to finish grade or top of mulch as required.
- b. Place part-circle pop-up sprinkler heads two inches (2") from edge of and flush with top of adjacent walks, header boards, curbs and mowing bands or paved areas and 12 inches (12") from building foundations at time of installation.
- c. Set all sprinkler heads in turf to allow for settlement. Adjust as required after settlement. Hold heads two inches (2") clear of pavement edge.

K. Closing of Pipe and Flushing of Lines:

1. Capping: Cap or plug all openings as soon as lines have been installed to prevent entrance of materials that would obstruct the pipe. Leave in place until removal is necessary for completion of installation.

L. Detection Wire and Warning Tape:

1. Install a bare # 12 copper wire or greater on top of the PVC supply line for the purpose of possible future mine detection search.
2. Install a continuous PVC irrigation mainline warning tape 12" above the supply line.

M. RCV IDENTIFICATION TAGS: Install in remote control valve box as recommended by manufacturer and as accepted by Owner's Representative.

3.5 MISCELLANEOUS EQUIPMENT

- A. Install miscellaneous equipment with concrete footings, brackets, etc., as required and as recommended by manufacturer.

3.6 FIELD QUALITY CONTROL

A. Testing of Irrigation System:

1. Make hydrostatic tests with risers capped when welded PVC joints have cured at least 24 hours. Center load piping with backfill to prevent pipe from moving under pressure. Keep all couplings and fittings exposed.
2. Install two (2) pressure gauges at opposite ends of main line system. Pump system up to a minimum of 125 psi the day preceding the scheduled test and verify that pressure is holding. Inspect system early following day and immediately notify Owner's Representative if the test confirmation must be postponed.

3. Apply continuous static water pressure of 125 psi in accordance with Caltrans Standard Specifications Section 20-5.03H, except after a drop in pressure (5 psi maximum), then the pressure must stabilize and remain stable for a one (1) hour minimum period before acceptance of the test.
4. Leaks detected during tests shall be repaired and test repeated until system passes tests at no additional cost to Owner.

B. Adjustment of the System:

1. Flush and adjust all sprinkler heads for optimum performance and to prevent overspray onto walks, roadways and buildings. Adjust the arc and radius as applicable.
2. Include as a part of the work any nozzle changes or arc adjustments necessary due to daytime windy conditions during grass establishment period. After grass has been established and watering can be performed during calm early morning or evening hours, make any required adjustments to nozzles and arcs.
3. Set all sprinkler heads perpendicular to finished grades unless otherwise noted on the drawings.
4. When the landscape sprinkler system is completed and before planting, perform a coverage test in the presence of the Owner's Representative to determine if the water coverage for planting areas is adequate.
5. Test controllers individually in the presence of the Owner's Representative and the Landscape Architect. Demonstrate that all control valves operate electronically. Provide vehicles and radio equipment as necessary to expedite this process.
6. Demonstrate to Owner's Representative that irrigation scheduling programmed into controller is adequate for plant requirements without causing runoff, and that scheduling capacities of controller are utilized.

3.7 BACKFILL AND COMPACTING

- A. General: After system is operating and required tests and reviews have been made, backfill excavations and trenches with clean soil, free of debris.
- B. Backfill for All Trenches: Regardless of the type of pipe covered, compact to minimum 95% density under pavements and 85% under planted areas.
- C. Finishing: Dress off areas to finish grades. Re-dress any areas which subsequently settle.
- D. Owner's testing agency will test backfill compaction in areas under paving.

3.8 MAINTENANCE

- A. The entire sprinkler irrigation system shall be under full automatic operation for a period of 2 days prior to any planting.
- B. The Owner's Representative reserves the right to waive or shorten the operation period.
- C. Maintain/repair system for full duration of plant maintenance period.

3.9 REVIEWS PRIOR TO ACCEPTANCE

- A. Notify the Owner's Representative in advance for the following reviews, according to the time indicated:
 - 1. Supply line pressure test and control wire installation - 72 hours.
 - 2. Coverage and controller test - 72 hours.
 - 3. Final review - 7 days.
- B. No reviews will commence without record drawings, without completing previously noted corrections, or without preparing the system for review.

3.10 FINAL REVIEW AND CLEANUP, per Section 01700.

- A. Operate each system in its entirety for the Owner's Representative at time of final review. Any items deemed not acceptable by the Owner's Representative shall be reworked to the complete satisfaction of the Owner's Representative.
- B. Provide evidence to the Owner's Representative that the Owner has received all accessories and equipment as required before final review can occur.
- C. Final acceptance and start of warranty period will occur no earlier than the end of the plant maintenance period.
- D. For time of final review, Contractor shall arrange a meeting with the Owner's maintenance personnel to demonstrate the operation of the irrigation systems automatically in order to verify acceptance and to familiarize the maintenance personnel with the system and recommended programming.

*** END OF SECTION ***

SECTION 33 44 00

EXTERIOR STORM SEWER SYSTEM

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. All requirements of the Special and General Conditions form a part of this Section.

1.02 DESCRIPTION

- A. Work Included: Provide storm sewer system work including, but not limited to, the following:
 1. Underground storm sewer piping serving rain leaders and new relocated storm sewer.
 2. Storm sewer piping extending outward from points 5 feet outside building.
 3. Catch basins and junction boxes.
 4. Catch basin gratings, covers and frames.
 5. Infiltration wells.

1.03 SUBMITTALS

- A. Refer to the General Conditions for submittal procedures.

1.04 PRODUCT DATA

- A. Submit manufacturer's product data indicating manufacturer's catalog number or model number, size, performance data, materials of construction and finishes as applicable

1.05 SUBMITTALS LIST

- A. Submittals shall be included for the following:
 1. Storm sewer pipe materials, fittings and gaskets.
 2. Precast catch basins and junction boxes
 3. Frames and grates for catch basins and manholes.

1.06 CODES AND STANDARDS

- A. Storm sewer work shall be in accordance with applicable requirements of governing authorities having jurisdiction.
- B. Standard Specifications from the State of California, Department of Transportation (CALTRANS), latest edition, are hereby made a part of this Section, except as noted herein and on the drawings.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Provide piping materials and factory-furnished piping products of sizes, types and pressure ratings or class as indicated. Where more than one type of material or product is specified, the Contractor may, at his/her option, use any of the specified materials for that particular service.

2.02 SERVICE

- A. Storm sewers.

2.03 MAXIMUM DESIGN

- A. Pressure: Atmospheric or as indicated.
- B. Temperature: 100°F.

2.04 PIPE

- A. For 18" pipe use ADS N-12 or approved smooth interior walled High Density Polyethylene pipe with an equal meeting the following specifications: AASHTO M294, Type S, for pipes 4 to 36 inches produced from PE certified by the resin producer as meeting the requirements of ASTM D 3350, minimum cell class 315412C or 324420C.
- B. For 21" Reinforced Concrete Pipe (RCP), all RCP shall conform to ASTM Designation C76 and pipe shall be Class III unless otherwise specified on the drawings. Portland Cement used in the manufacture of RCP shall conform to the requirements of the specifications for Type II Portland Cement, ASTM Designation C150. Contractor shall submit manufacturer's "Certificate of Compliance" on all RCP guaranteeing the requirements of ASTM C76.

2.05 FITTINGS

- A. Where manholes are manufactured with "A-Lok" gaskets or equal, use an A-2000 Bell / SDR 35 (ASTM D3034) Spigot adapter. Size "A-Lok" gasket for SDR35 (ASTM D3034) pipe.
- B. HDPE (flexible) Manhole Connector (Waterstop type).
- C. Galvanized metal slip joints, reducers, coupling bands shall conform to AASHTO M36/M 36M and the provisions of CALTRANS Section 66

2.06 JOINTS

- A. For plastic storm sewers they shall have watertight joints as recommended/provided by pipe manufacturer meeting ASTM D3212 or for RCP, joints may be either rubber gasketed or tongue and groove with field applied mortar filled joints.

2.07 FLEXIBLE COUPLINGS

- A. Couplings formulated from PVC compound, conforming to applicable sections of ASTM C443 and C564 with Type 300 Series stainless steel bands, manufactured by Fernco or approved equal.

2.08 CATCH BASINS

- A. General
 - 1. Poured concrete or precast reinforced concrete sections as indicated on the drawings or equal. Concrete reinforcing steel, and associated items shall be in accordance with applicable requirements of Section 32 13 00 – Portland Cement Concrete Walks and Pavement and the CALTRANS STANDARD SPECIFICATIONS.
- B. Cast-In-Place Concrete
 - 1. Provide concrete which will attain a 28-day compressive strength of not less than 4000 psi.
- C. Precast Concrete
 - 1. Precast concrete sections shall be in accordance with ASTM C478 with rubber joint gaskets conforming to ASTM C443. Pipe openings shall be factory core drilled and Kor-n-Seal, A-Lok or equal gaskets installed or mortared in place for RCP connections.
- D. Metal Accessories
 - 1. Catch Basin Frames and Grates: Galvanized Steel frames and grates as indicated on the drawings, or equal.

EXECUTION

2.09 EXISTING PLANTING

- A. Protect existing trees and shrubs outside the trenching area from earthwork and other operations with suitable barriers per Civil Drawings C1 and C2.
- B. Protect designated trees within the trenching area with suitable barriers install and located around the trees at the drip line per Civil Drawings C1 and C2. Use hand digging and trenching as required for underground work.

2.10 INSPECTION

- A. Examine the areas and conditions under which the work is to be installed and notify the District Construction Manager in writing of any conditions detrimental to the proper and timely completion of the work.

2.11 GENERAL

- A. Pipe shall be installed in accordance with governing authorities having jurisdiction, except where the requirements of this Specification are more stringent, in which case, the requirements of this Specification shall govern.

- B. Inspect pipe before installation to detect any apparent defects. Mark defective materials with white paint and promptly remove from the site.
- C. Provide firm bed, compacted and of materials specified. Shape bedding so that pipe is supported uniformly along entire bottom quadrant of pipe and does not rest on bell or joint when brought to grade. Set each length to grade and line before making joint.
- D. Lay to uniform grade between elevations shown or to pitch indicated. Use electronic beam to establish vertical control. Lay bell-and-spigot pipe with bells upstream (or groove upstream for tongue and groove RCP).
- E. Keep water out of pipes until piping has been accepted. Close open ends of piping during construction to prevent earth entering lines. Close stub ends of lines and unused openings in fittings.
- F. Do not lay pipe in severe cold (below 15°F) or wet weather unless specifically authorized by the Construction Manager.
- G. Gaskets shall be installed in accordance with manufacturer's recommendations for the use of lubricants, cements, and other special installation requirements.

2.12 CLEANING PIPE

- A. Clear the interior of pipe of dirt and other superfluous material as the work progresses. Maintain a swab or drag in the line and pull past each joint as it is completed.
- B. Flush lines between manholes if required to remove collected debris.

2.13 JOINT ADAPTORS

- A. Make joints between various other types of pipe with fittings and flexible couplings as specified in Item 2.07 above.

2.14 INTERIOR INSPECTION

- A. Inspect conduit to determine whether line displacement or other damage has occurred.
- B. If the inspection indicates poor alignment, debris, displaced pipe, infiltration or other defects, take whatever steps are necessary to correct such defects to the satisfaction of the District Construction Manager.

2.15 CATCH BASINS

- A. Provide catch basins, trench drains and sump pits of sizes, depths and at locations as shown on the drawings. Where catch basins occur in pavements, set tops of frames and grates flush with finish surface. Elsewhere, set tops 1 inch below finish grade unless otherwise indicated.
- B. Frames shall be set in a bed of cement grout approximately ½-inch thick and after setting, additional grout shall be applied around and to the top of the outer edge of the frame, laid full to the outside of the concrete section and struck off. The grout shall be struck off flush with the inside of the frame.

- C. Where the sewer pipe or pipes enter and leave the catch basin, the invert channel or channels shall be smooth and semicircular in cross section of the same diameter of the pipe leaving the manhole. The channel or channels may be formed directly in the concrete or may be half-pipe laid in the concrete. Changes in direction of flow or sewer centerline within the catch basin shall be made by forming the invert channel or channels along a smooth curve with as long a radius as the inside dimension of the catch basin will allow, maintaining the semicircular cross-section. The floor, or bench, of the catch basin outside of the channel or channels shall be smooth and slope toward the channel or channels not less than 1 inch per foot. The floor shall have no level surfaces.

2.16 CLEANOUTS

- A. Construct per drawings and details

2.17 EXCAVATION AND BACKFILLING

- A. Do all necessary excavating required for the installation of underground work and provide all bedding and backfilling as required. Excavation and backfilling shall be in accordance with the requirements Section 31 23 33 – Earthwork for Utilities.

2.18 TESTING

- A. Low pressure air test shall be performed in accordance with ASTM C828 for plastic storm sewers. No air tests are required on RCP with mortared joints. Tabulate test results and provide the District Construction Manager with two copies of the results.

END OF SECTION